Imazon's (NGO) perspective on Earth Observations Capacity Building

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IMAZON
INSTITUTO DO HOMEM E
MEIO AMBIENTE DA AMAZÔNIA

Objectives

- Demonstrate how Earth Observation from satellite sensors has contributed to Imazon achieves its institutional mission
- Discuss the role of NGOs on the Earth Observation Programs and their societal benefits
- Present a potential list of Capacity Build activities for NGOs

Imazon's Research Driving Question and Mission

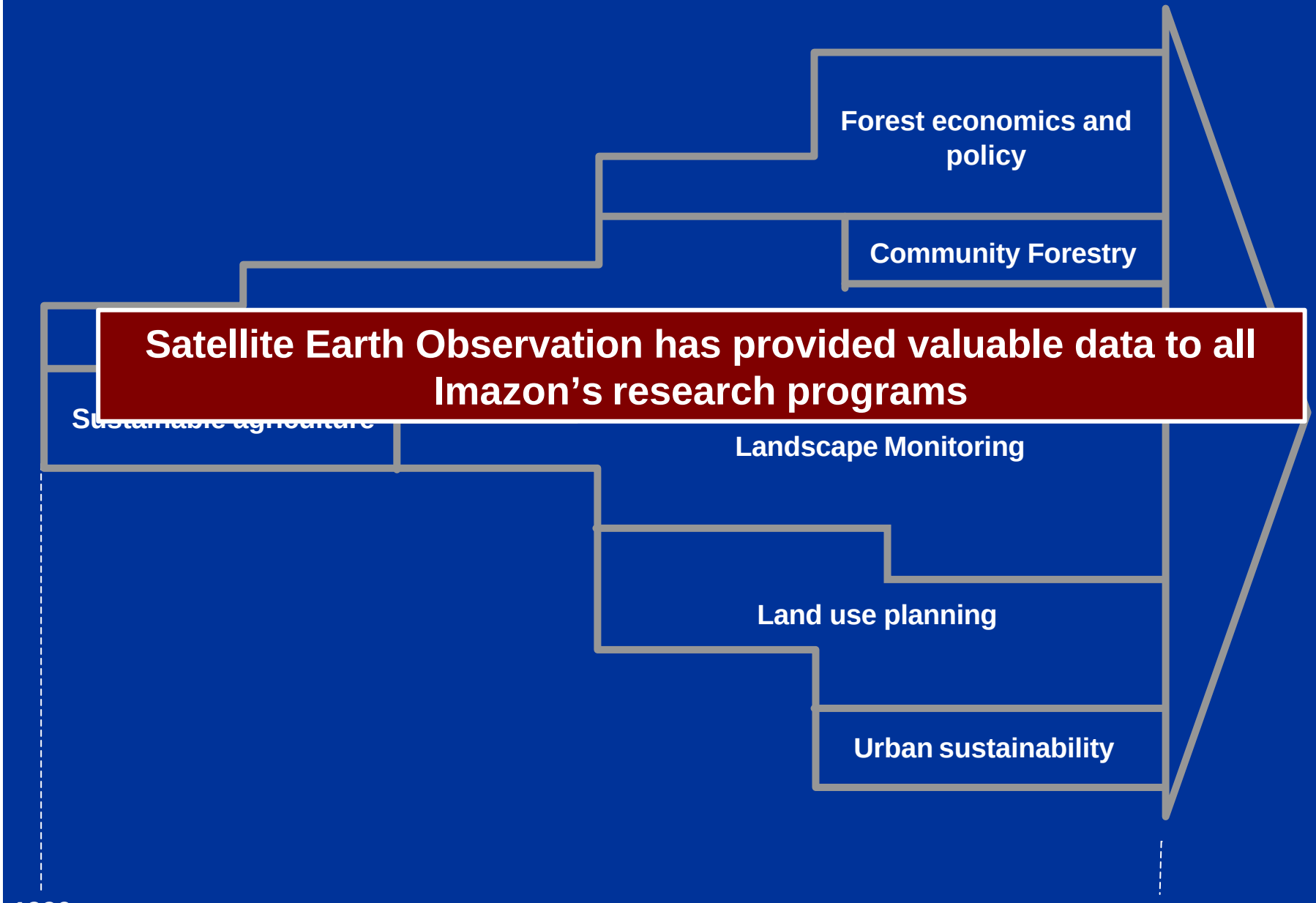
The driving question behind Imazon's work:

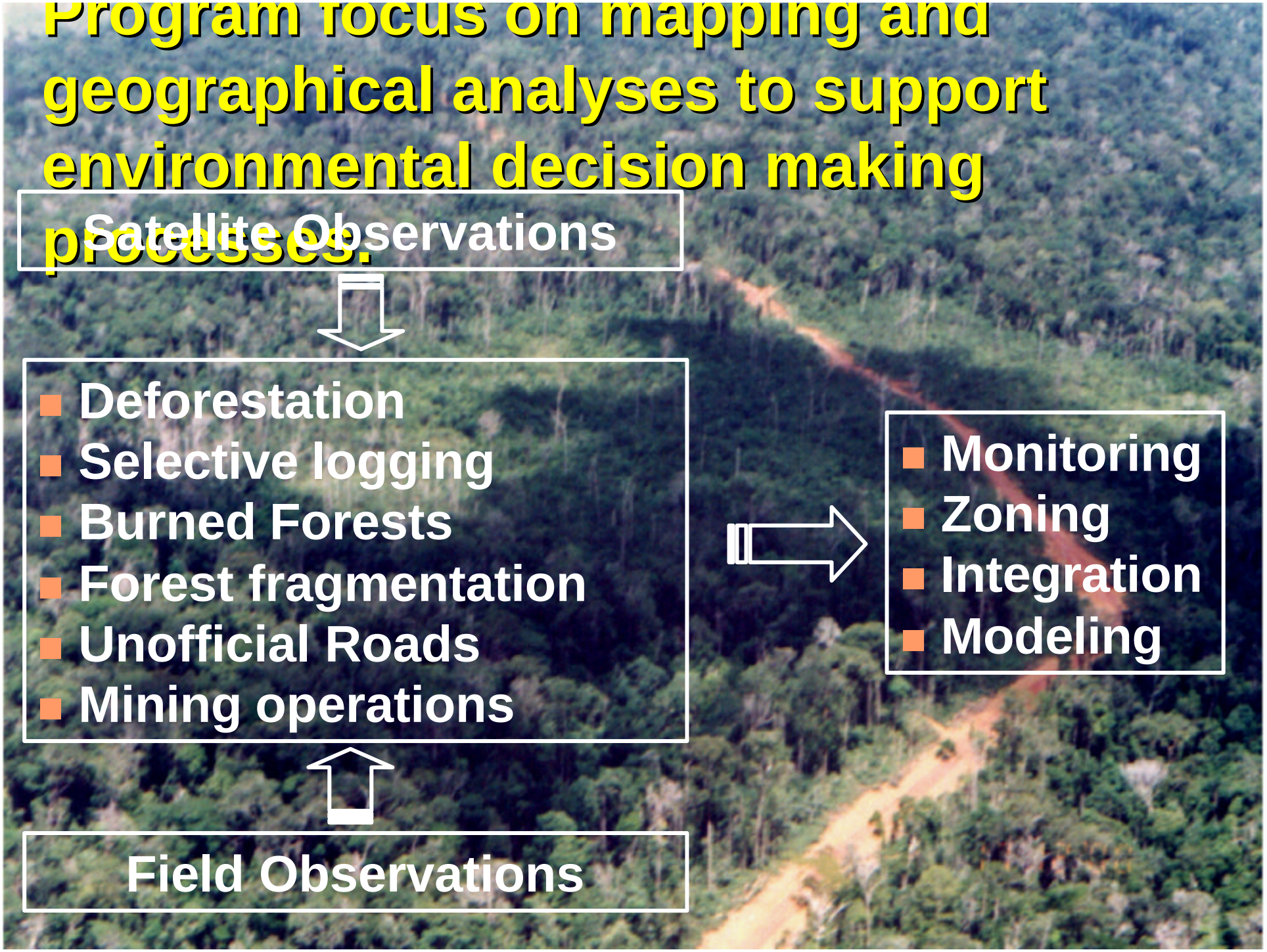
How can development in the Amazon be sustainable?

Mission

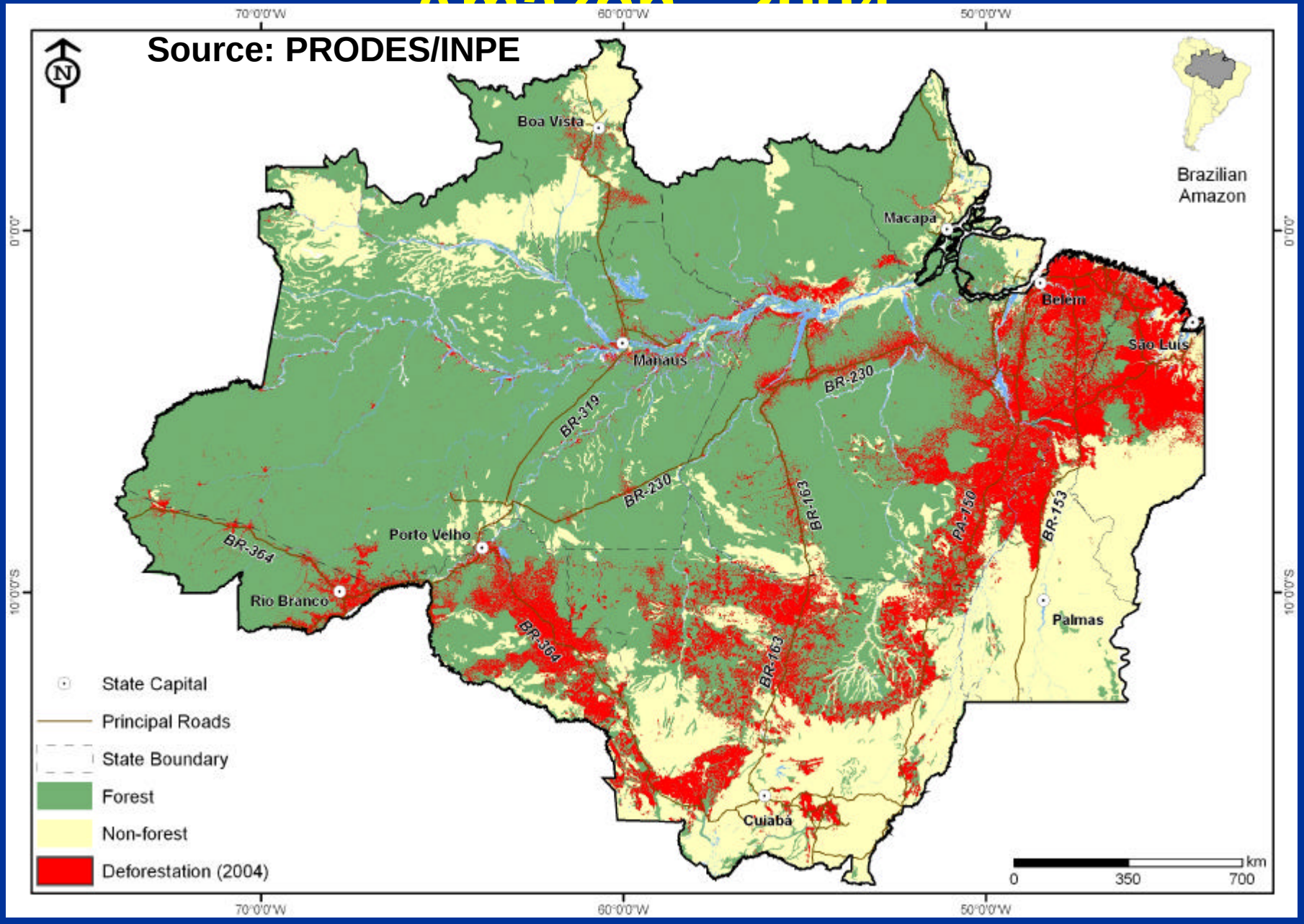
Imazon is a non profit research institution whose mission is to promote sustainable development in the Amazon region through research, information dissemination, support public policy formulation and professional training.

IMAZON'S RESEARCH PROGRAMS




Program focus on mapping and geographical analyses to support environmental decision making processes.
Satellite Observations
Deforestation
Selective logging
Burned Forests
Forest fragmentation
Unofficial Roads
Mining operations
Field Observations
Monitoring
Zoning
Integration
Modeling

Deforestation in the Brazilian Amazon - 2004



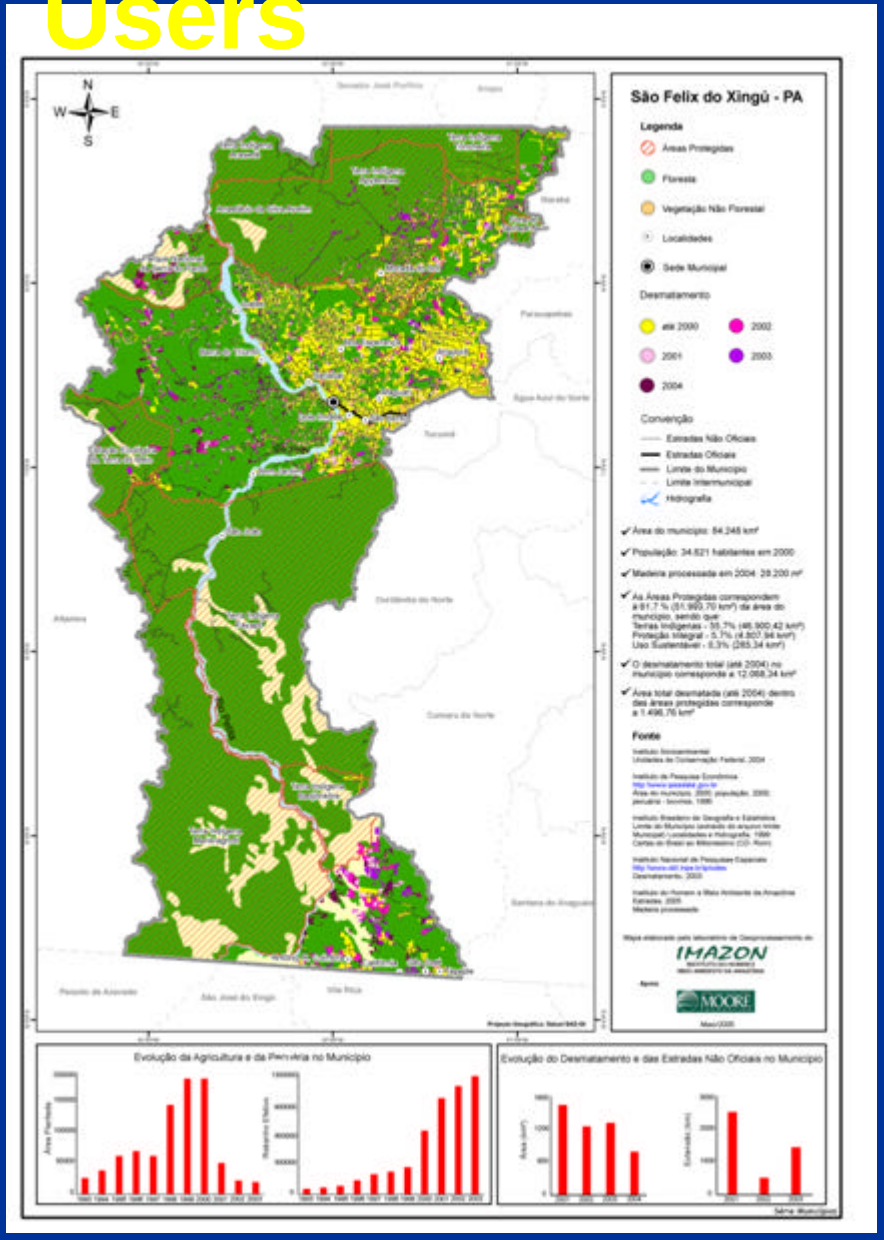
Annual deforestation rates

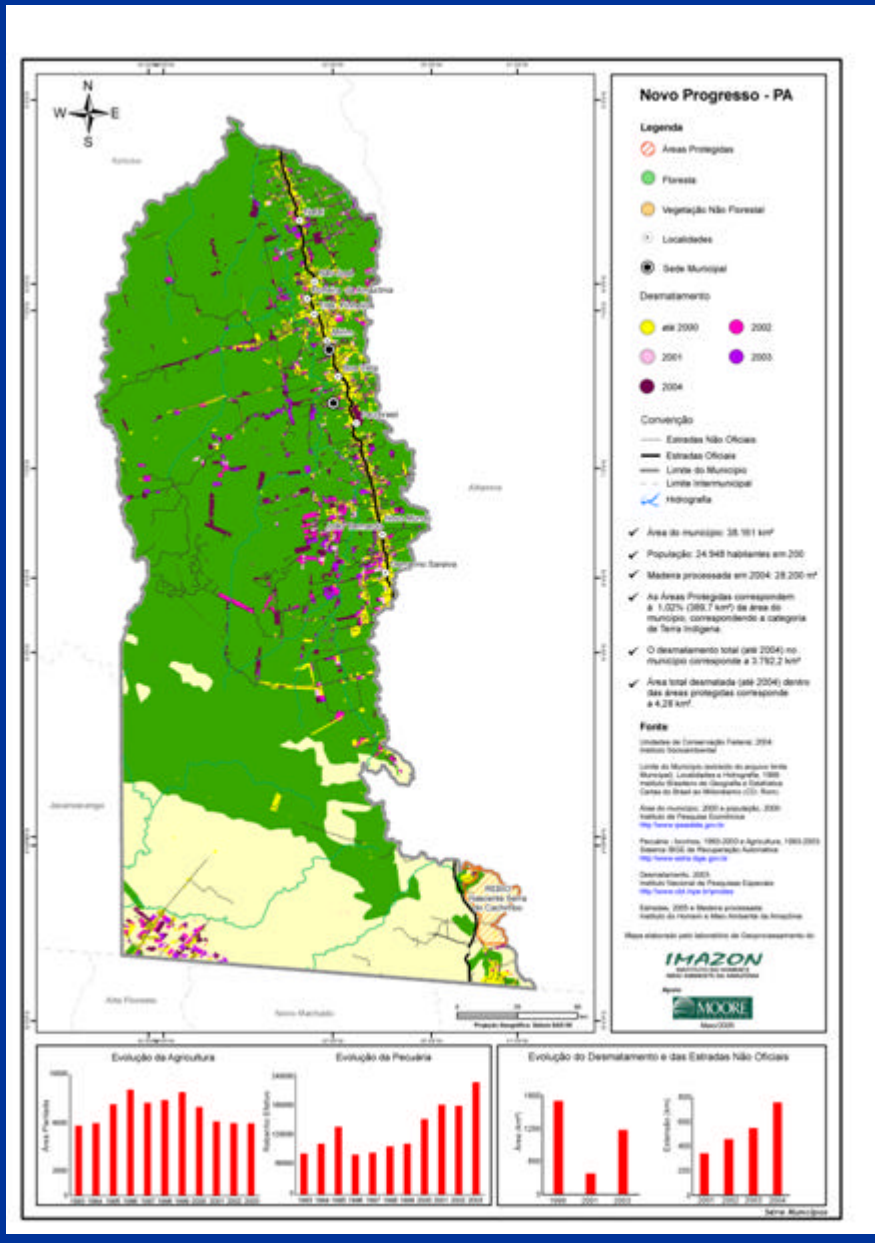
Source: INPE (2006)

- Annual rate: 11-29,000 km²/ano
- Total gross deforestation: 652.908 km²

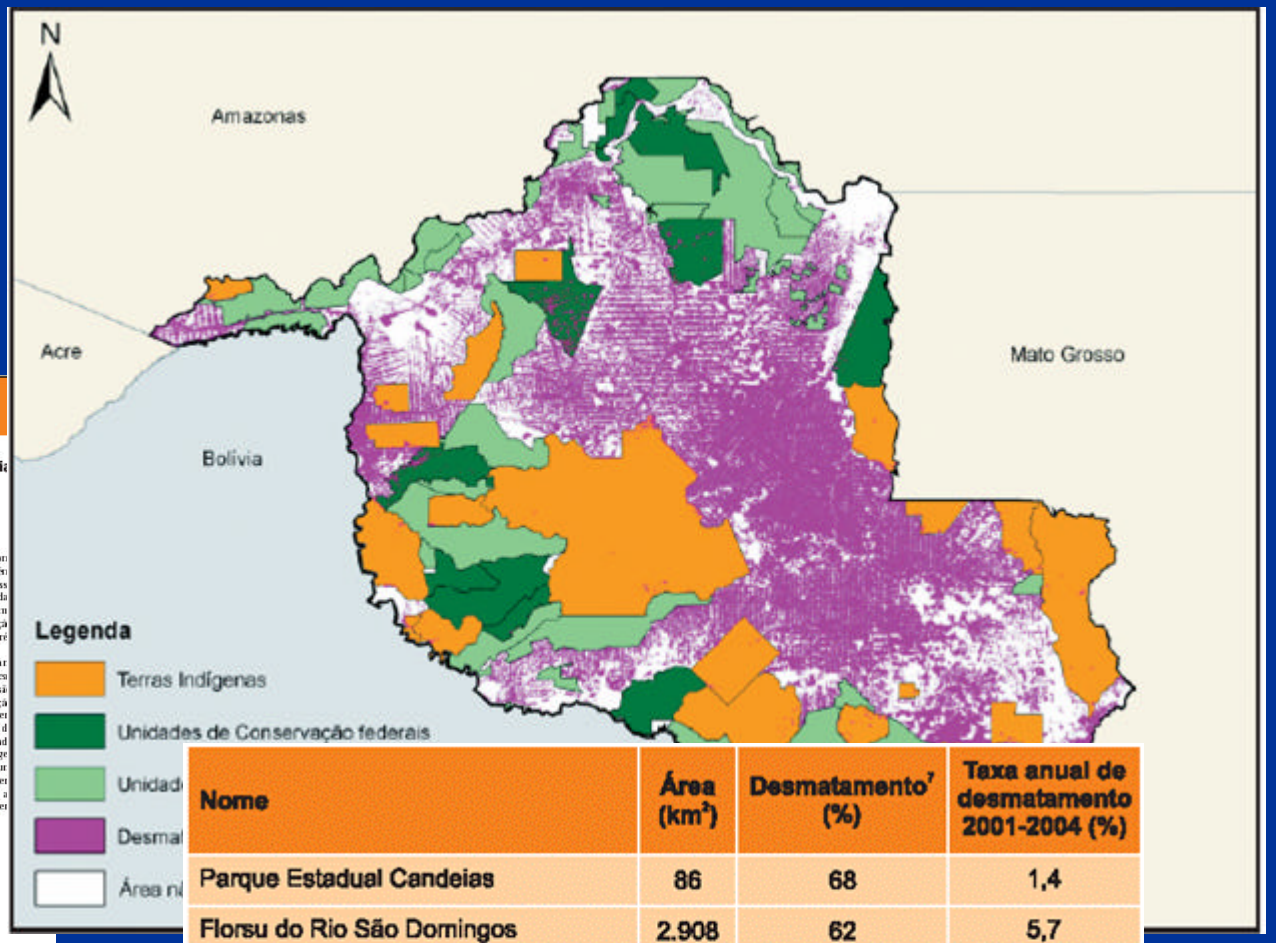
Sinop – Mato Grosso, Brazil.

Information Dissemination to Local Users





Information Dissemination: Policy Briefs



IMAZON O Estado da Amazônia

O Avanço do Desmatamento sobre as Áreas Protegidas em Rondôni

Beatriz Ribeiro*, Adalberto Veríssimo e Kátia Pereira

A criação de Áreas Protegidas (Unidades de Conservação e Terras Indígenas) é uma das estratégias mais efetivas e recomendadas para conservar a floresta amazônica. Cerca de 33% da Amazônia Legal são Áreas Protegidas. Em sua maioria, essas áreas têm funcionado como uma barreira contra o avanço do desmatamento. Entretanto, em Rondônia, as Áreas Protegidas estão ameaçadas pelo desmatamento ilegal. Até 2004, o desmatamento havia atingido cerca de 6,3% do território das Áreas Protegidas, enquanto a média para a Amazônia é de apenas 1,7%. Além disso, dez reservas já haviam perdido mais de 20% da floresta original e a taxa de desmatamento tem aumentado nessas áreas nos últimos anos. Neste *O Estado da Amazônia*, quantificamos o desflorestamento nas Áreas Protegidas de Rondônia até 2004. Além disso, identificamos as Áreas Protegidas mais ameaçadas pelo desmatamento. Os resultados obtidos são úteis para orientar os esforços de fiscalização e aperfeiçoar as políticas para a manutenção da integridade das Áreas Protegidas em Rondônia.

Áreas Protegidas de Rondônia

A maioria (54%) das Áreas Protegidas de Rondônia[1] foi criada entre 1993 e 2002, durante a vigência do Programa Planaflora[2]. Uma das metas desse projeto era assegurar a conservação da biodiversidade por meio da criação e implementação de uma ampla rede de Áreas Protegidas no Estado. A criação de Unidades de Conservação estaduais foi uma precondição para a efetivação do programa.

Atualmente, as Áreas Protegidas totalizam 106.617 km²[3], ou 45% de Rondônia. Há 84 Áreas Protegidas decretadas no Estado, das quais 20 são Terras Indígenas, 15 são Unidades de Conservação de Proteção Integral e 49 são Unidades de Conservação de Uso Sustentável. No caso das Unidades de Conservação, a grande maioria (52) é administrada pelo governo estadual, enquanto apenas 12 são geridas pelo governo federal (Figura 1). Em um Estado onde aproximadamente um terço da cobertura vegetal original já se encontra desmatado, as Áreas Protegidas têm um papel essencial na conservação dos remanescentes florestais.

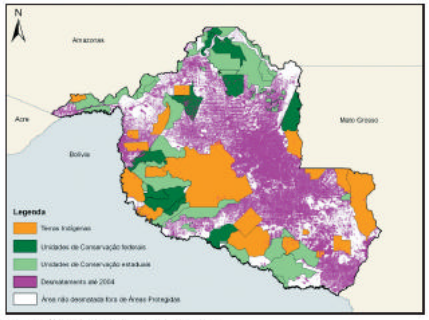
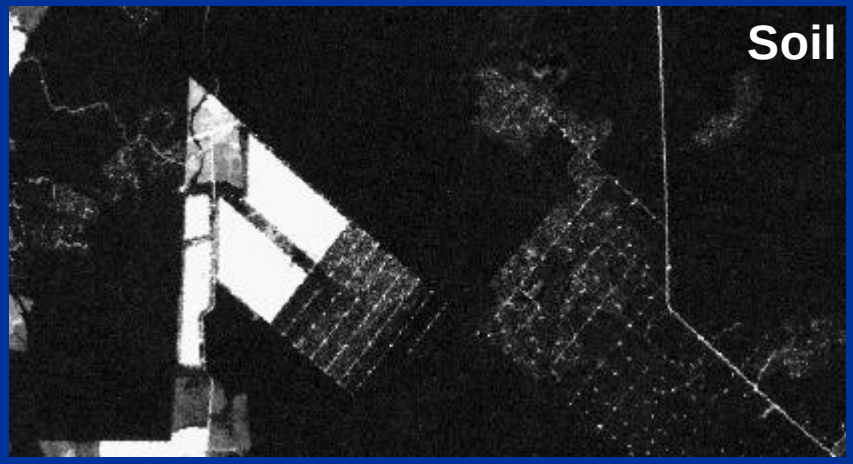


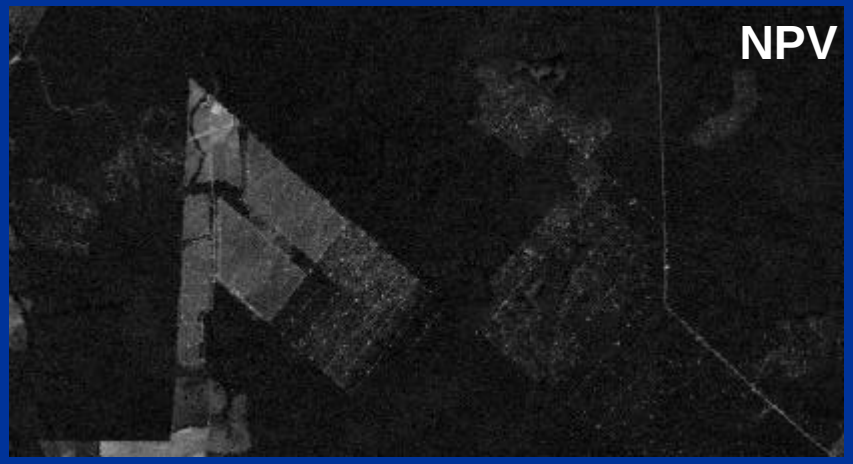
Figura 1. Áreas Protegidas no Estado de Rondônia.

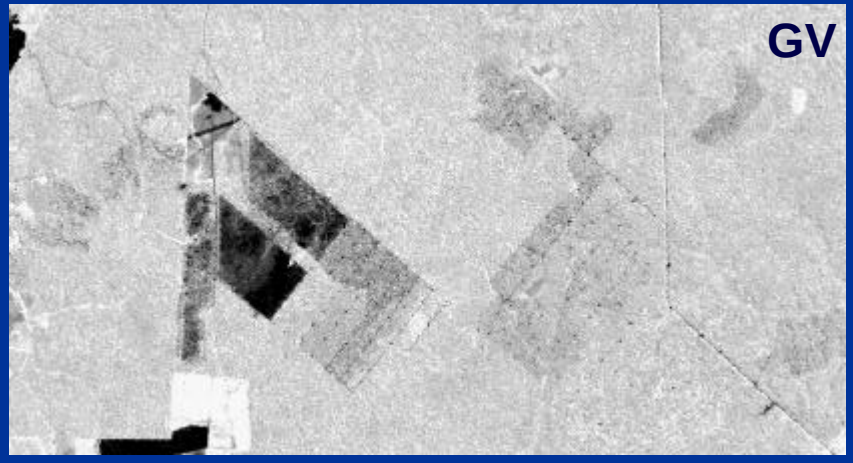
Nome	Área (km²)	Desmatamento[7] (%)	Taxa anual de desmatamento 2001-2004 (%)
Parque Estadual Candeias	86	68	1,4
Florsu do Rio São Domingos	2.908	62	5,7
Florsu do Rio Roosevelt	288	52	1,2
Florsu do Rio Abunã	507	48	3,9
Parque Estadual da Serra dos Parecis	375	46	4,0
Florsu do Rio Mequéns	3.630	43	2,0
Florsu do Rio Vermelho(c)	207	38	1,9
Reserva Extrativista Jatobá	13	34	1,6
Florsu do Rio Vermelho(d)	1.311	32	5,1
Florsu do Periquito	12	23	0,5

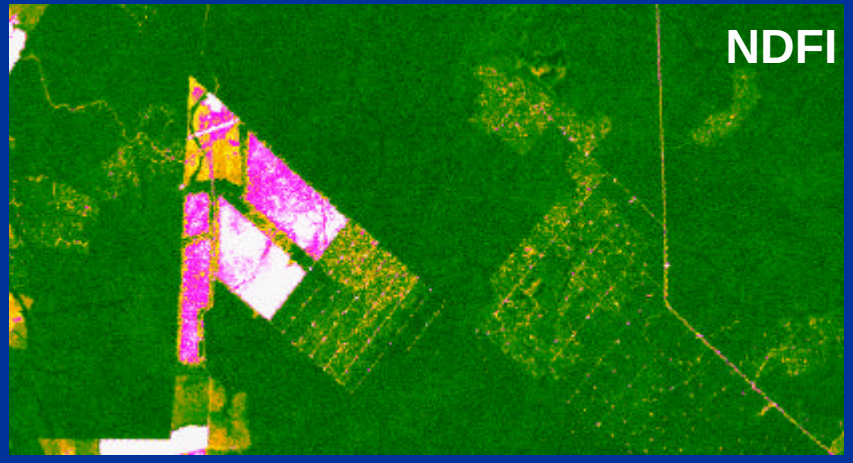
Mapping Selective Logging

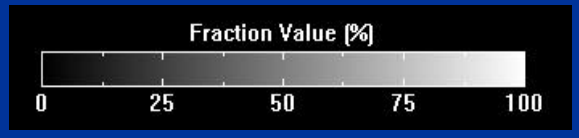
a) Paragominas,Pará State - 223/62

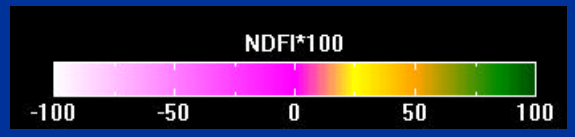








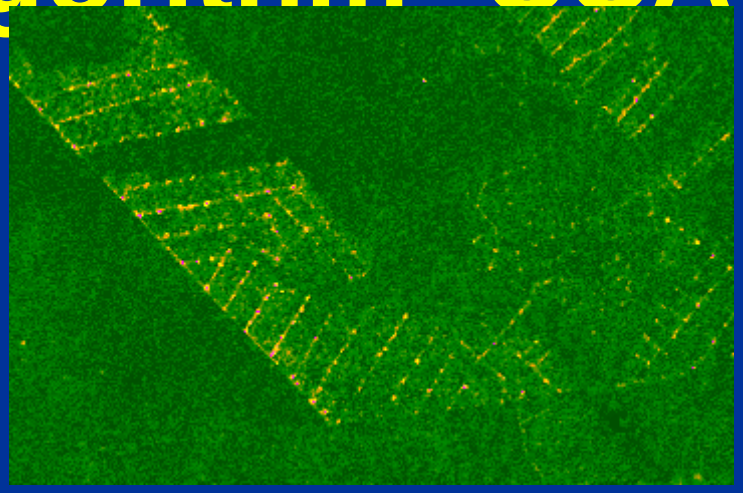


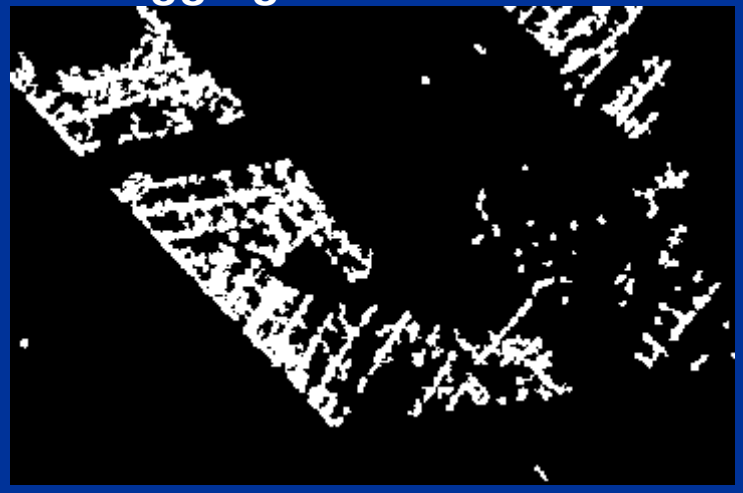


Souza Jr., et al. (2005)

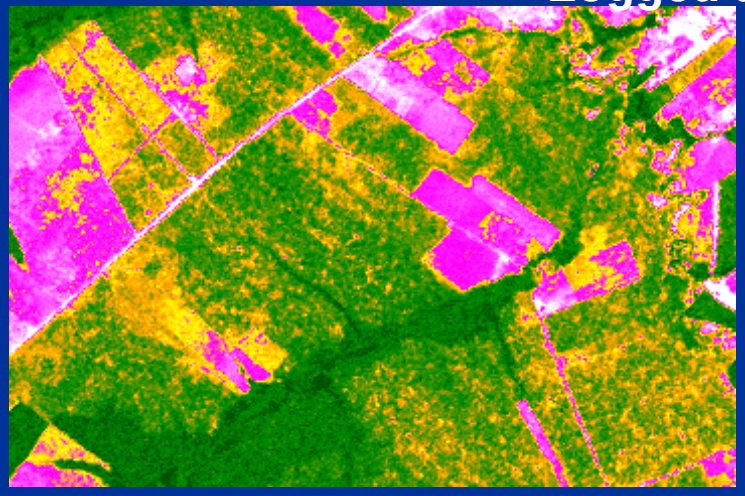
Mapping Canopy Damage
Contextual Classification Algorithm -CCA

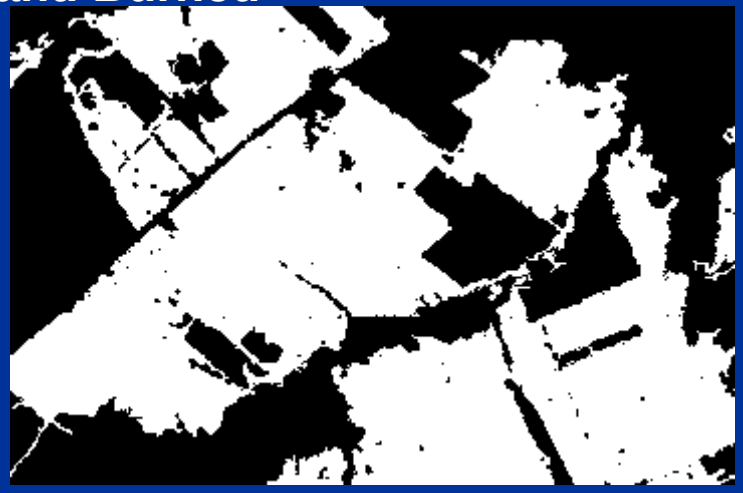
Conventional Logging



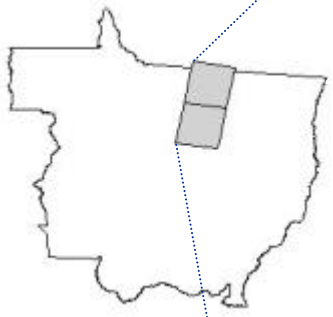


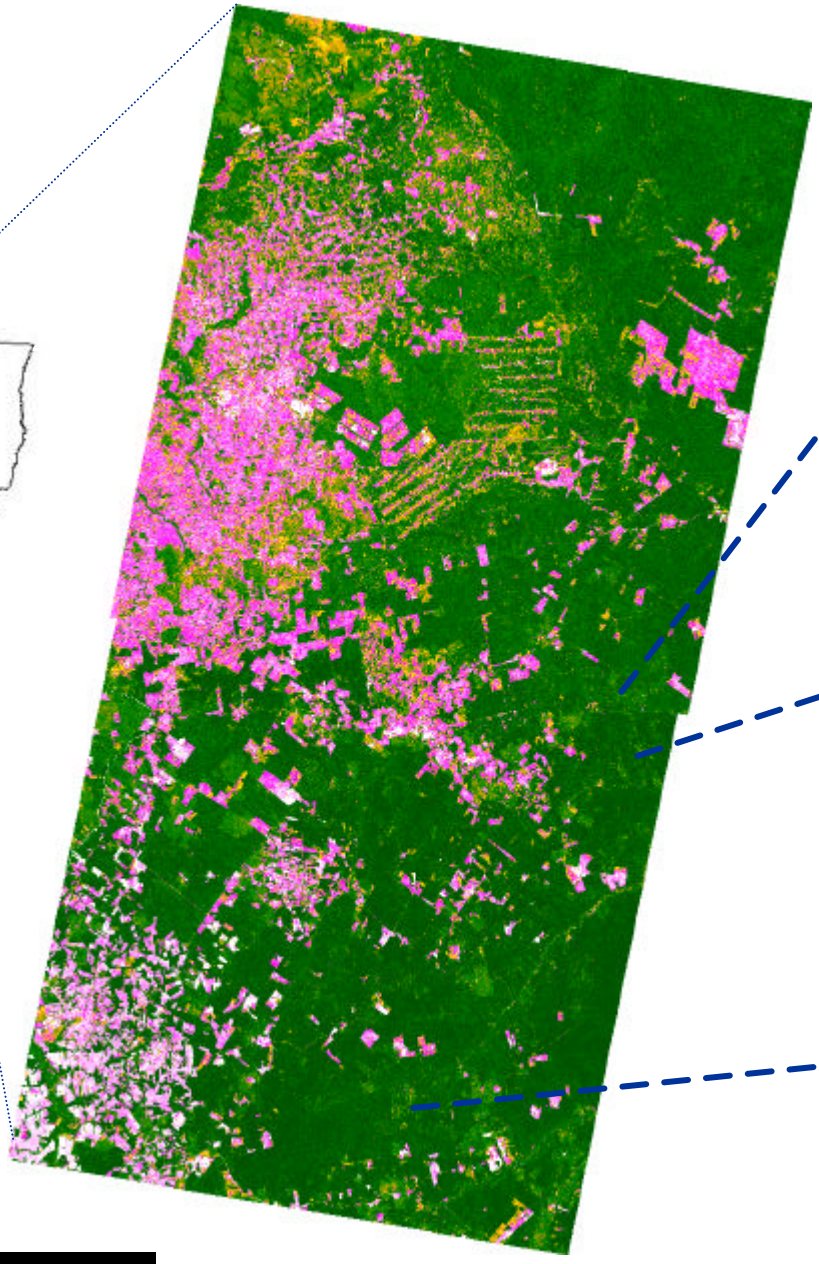
Logged and Burned

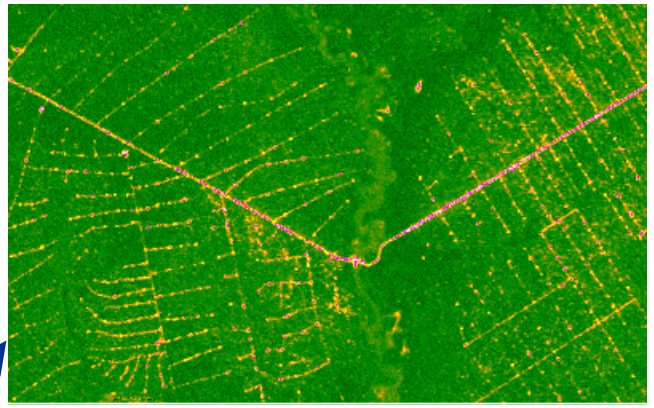


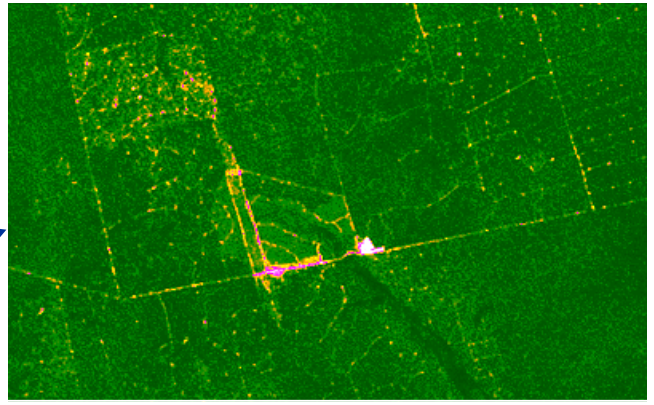


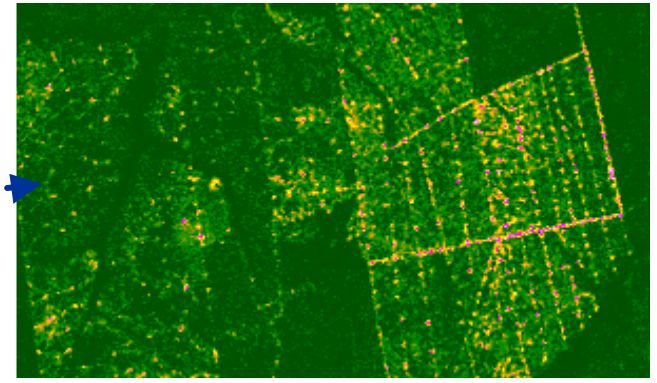
Mato Grosso

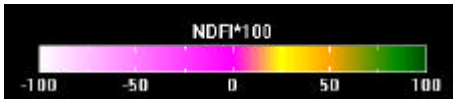


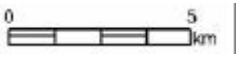












Burned Forest

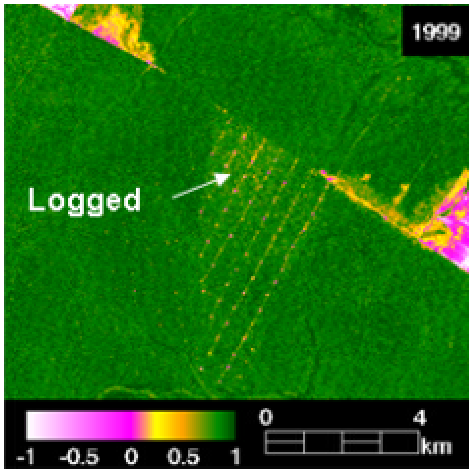
Management practice

source: WWF

Forest surface fires

source: USDA Forest Service

a



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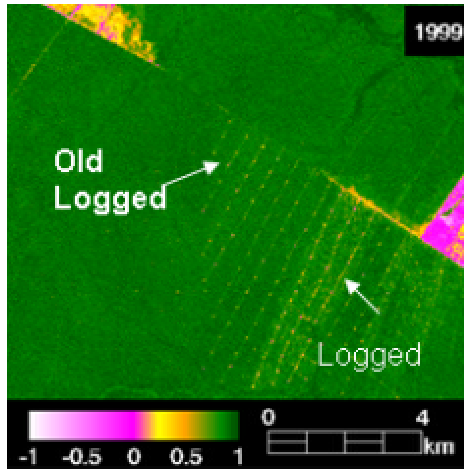

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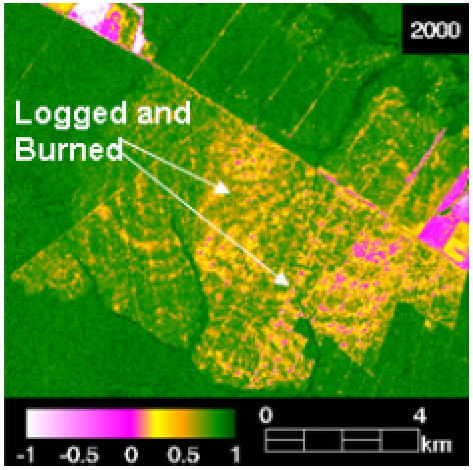

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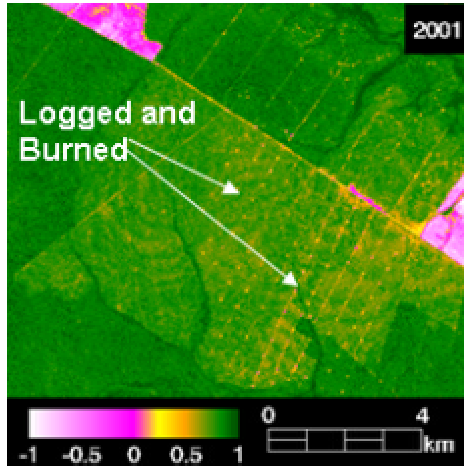

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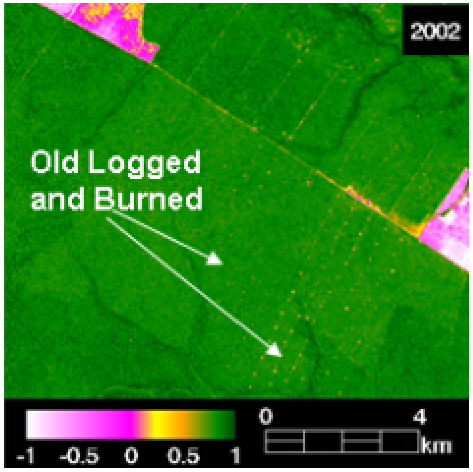

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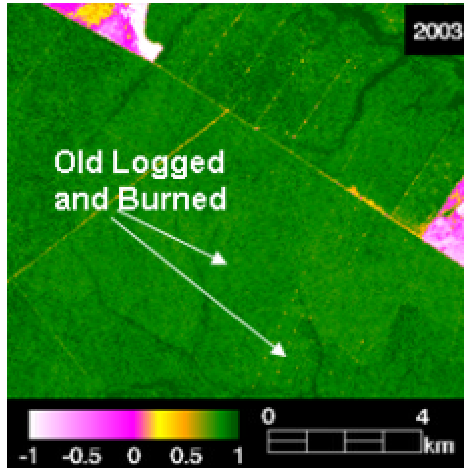
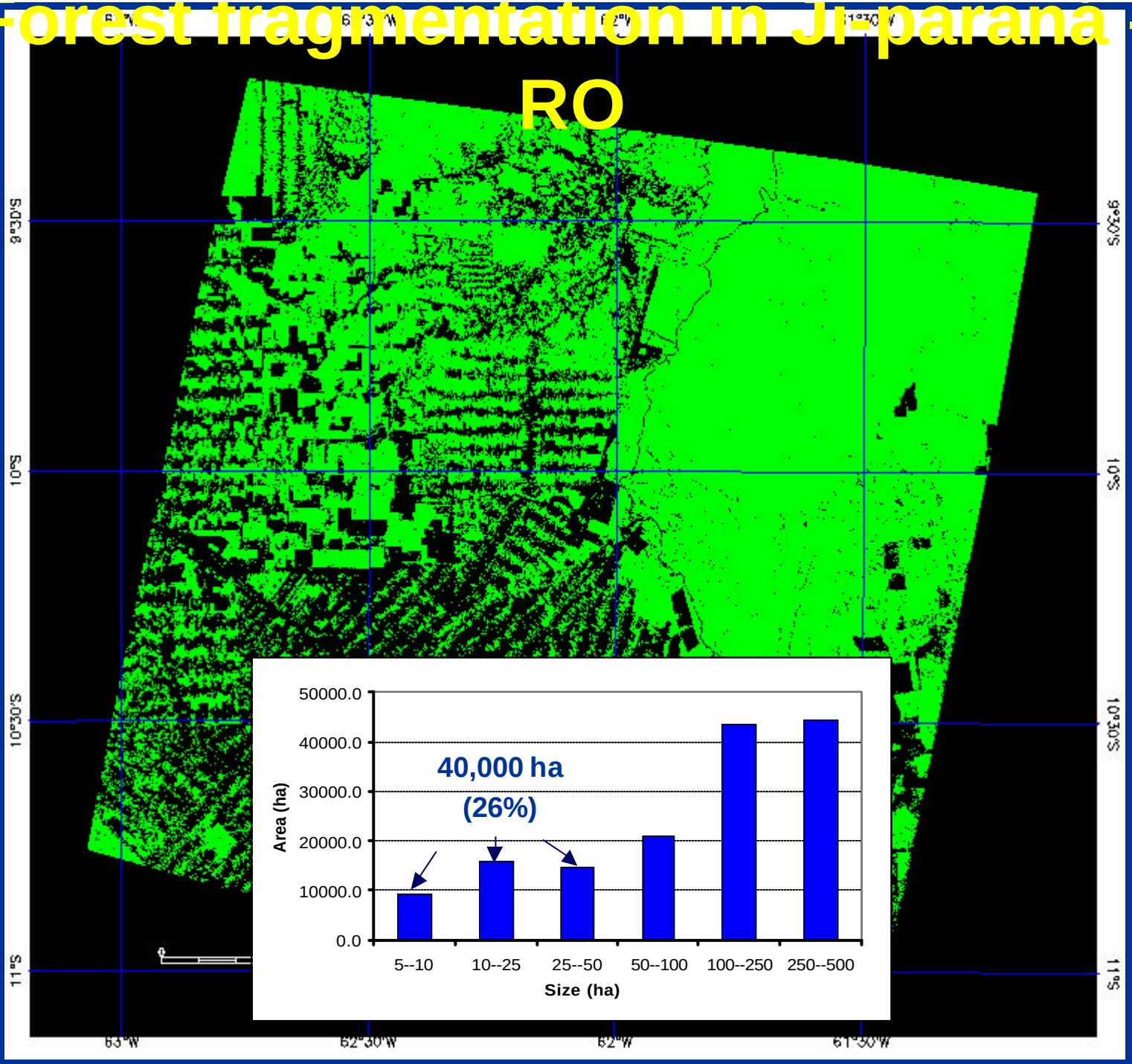
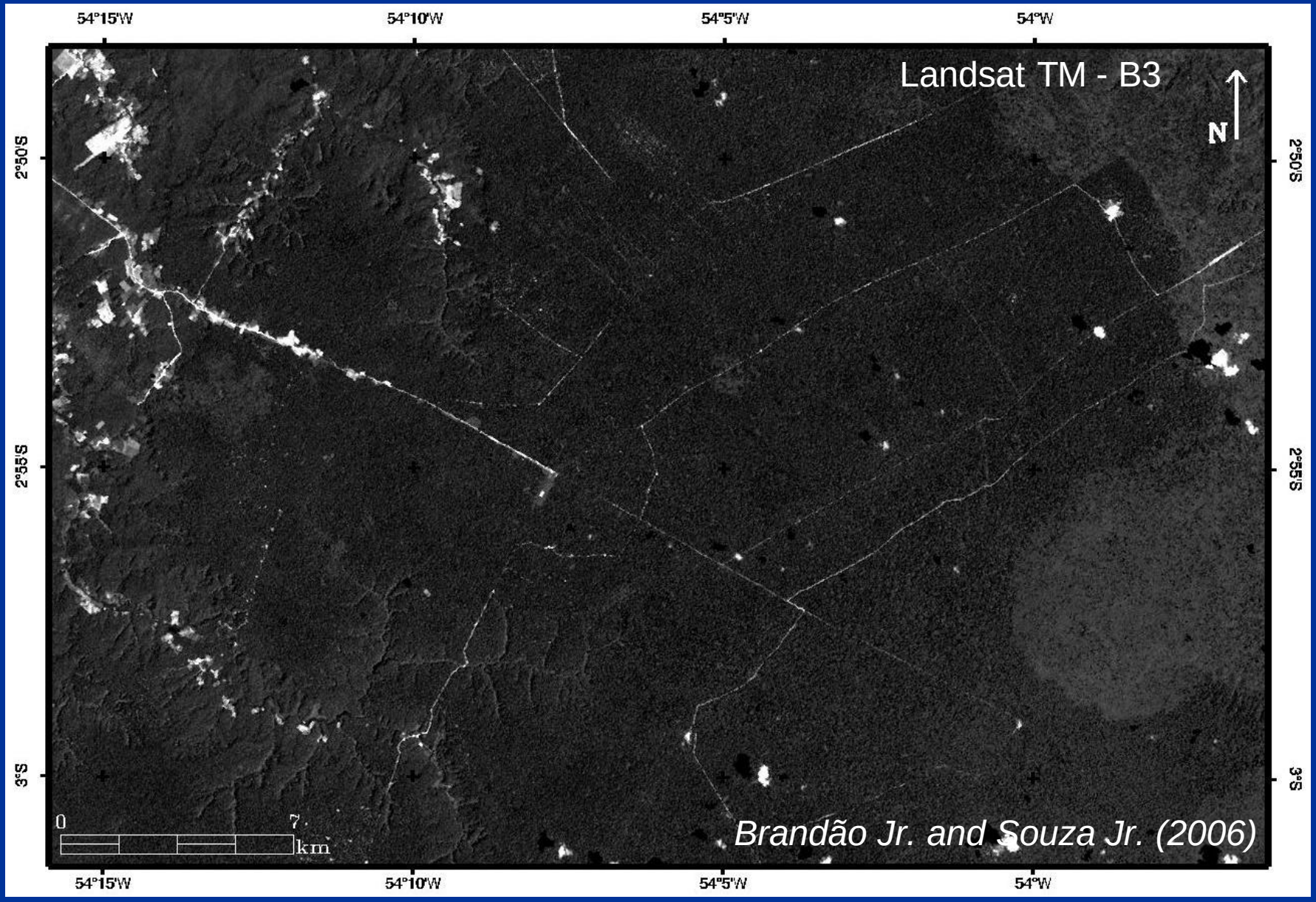


Forest fragmentation in Ji-parana – RO



Mapping Unofficial Roads



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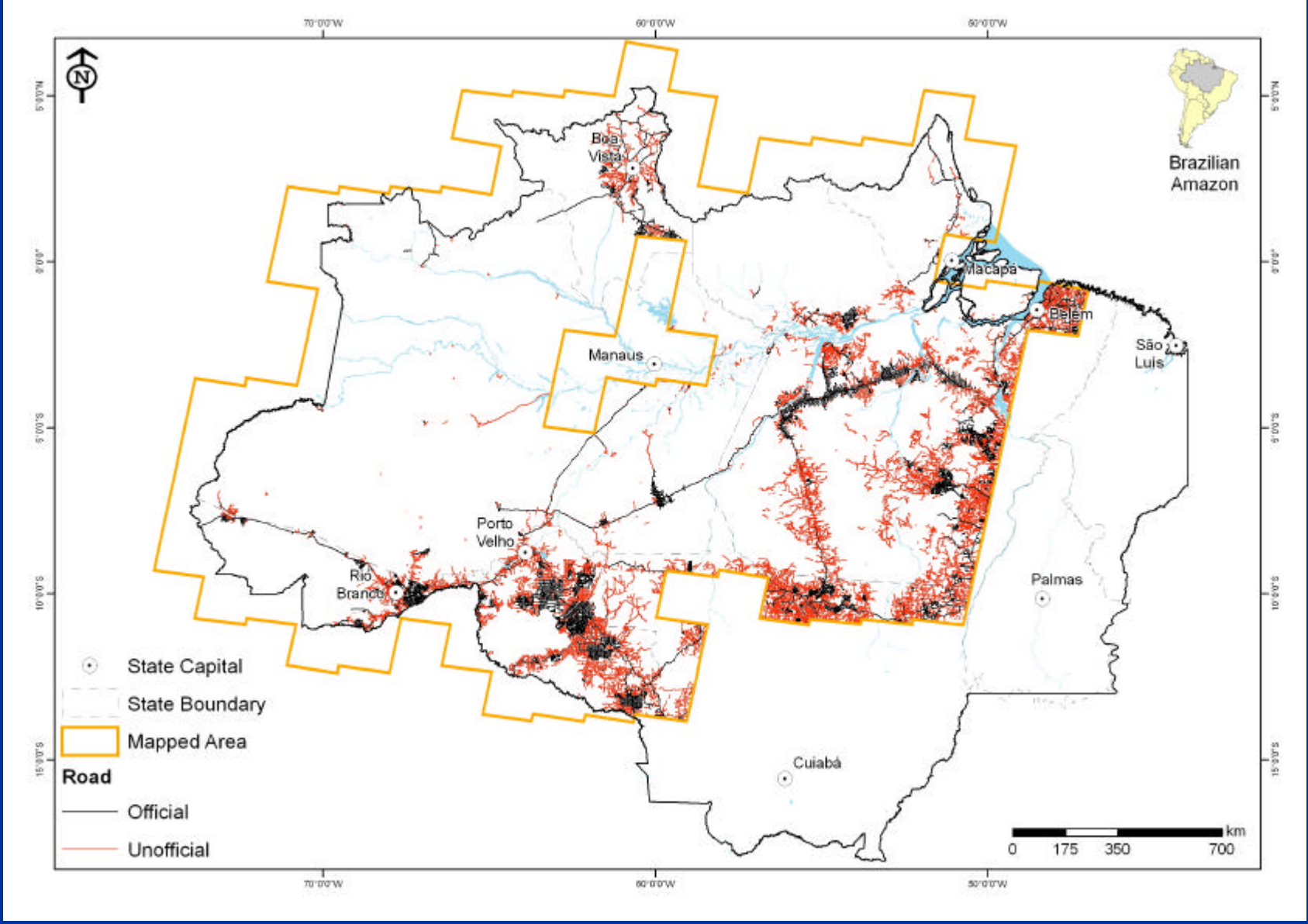
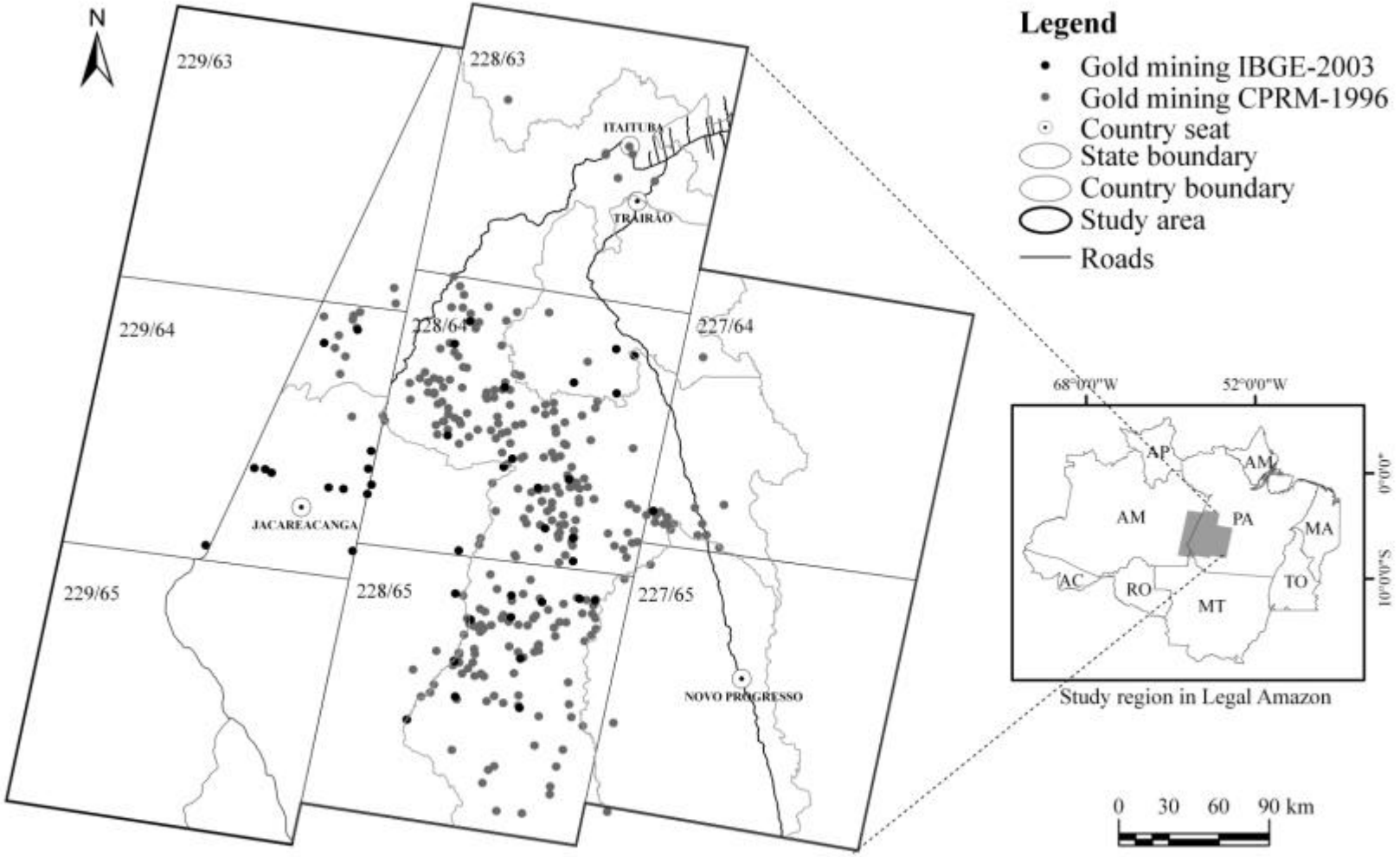
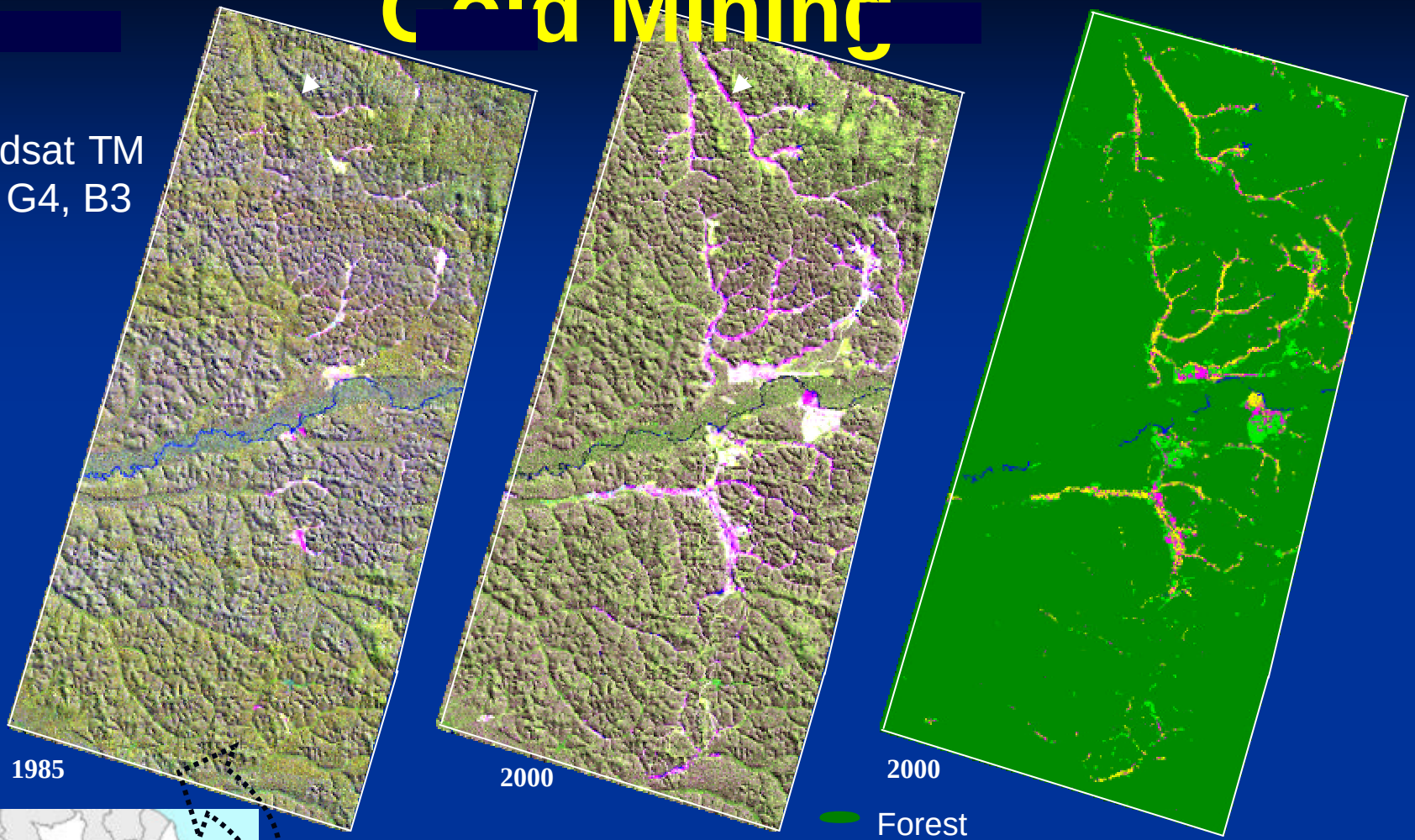


Gold Mining in the Tapajós River Basin



Mapping Forest Cover Impact of Gold Mining

Landsat TM
R5, G4, B3



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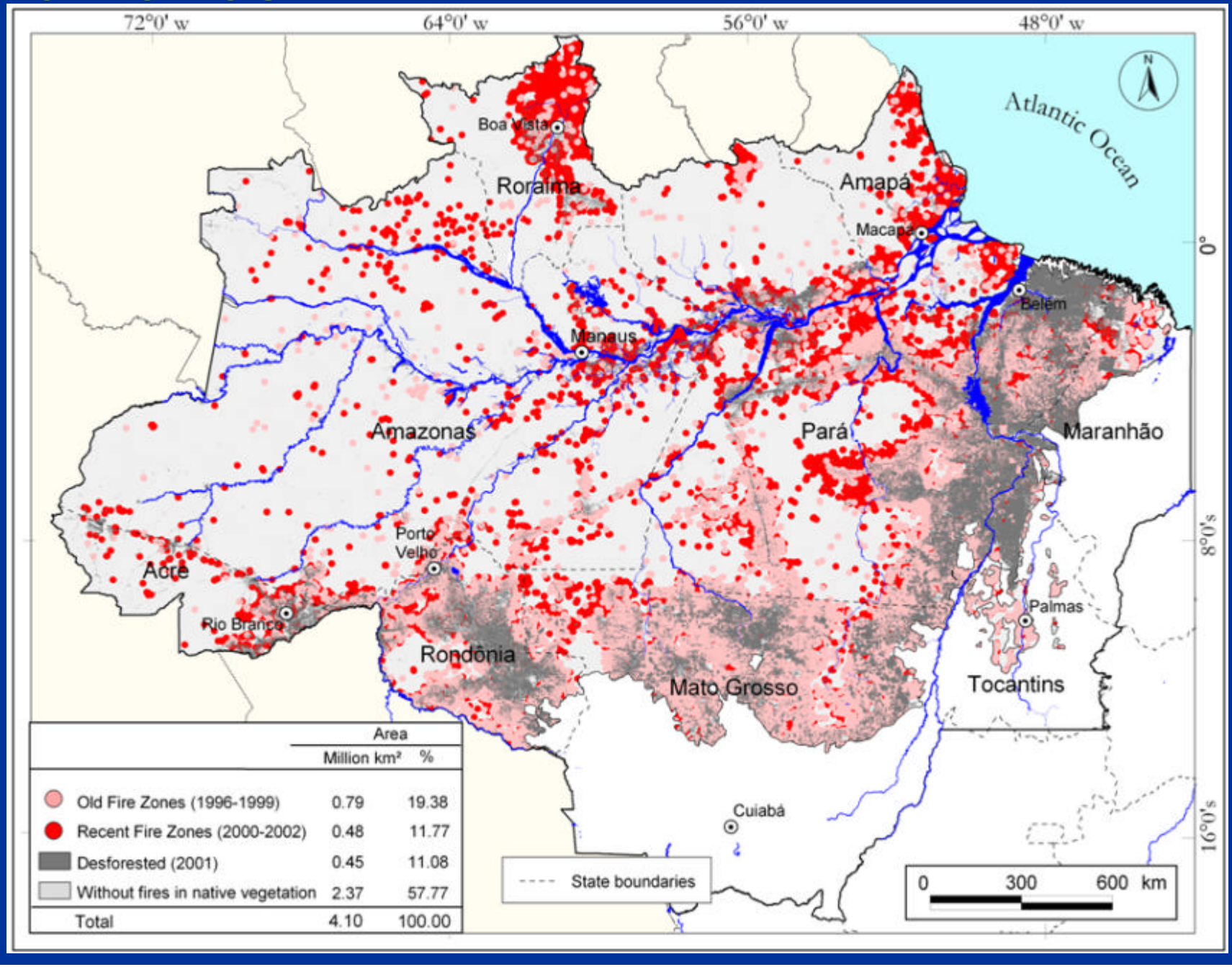
Active Fires

Acquired by the Moderate Resolution Imaging Spectroradiometer (MODIS) on June 30, 2003, this image shows a portion of the Brazilian state of Mato Grosso.

Source: http://earthobservatory.nasa.gov/

Fire Zones


72°0' w
64°0' w
56°0' w
48°0' w
0°
8°0's
16°0's
Atlantic Ocean
Boa Vista
Roraima
Amapá
Macapá
Belém
Manaus
Amazonas
Pará
Maranhão
Porto Velho
Acre
Rio Branco
Rondônia
Mato Grosso
Palmas
Tocantins
Cuiabá
State boundaries
0 300 600 km
Area
Million km² %
Old Fire Zones (1996-1999) 0.79 19.38
Recent Fire Zones (2000-2002) 0.48 11.77
Desforested (2001) 0.45 11.08
Without fires in native vegetation 2.37 57.77
Total 4.10 100.00

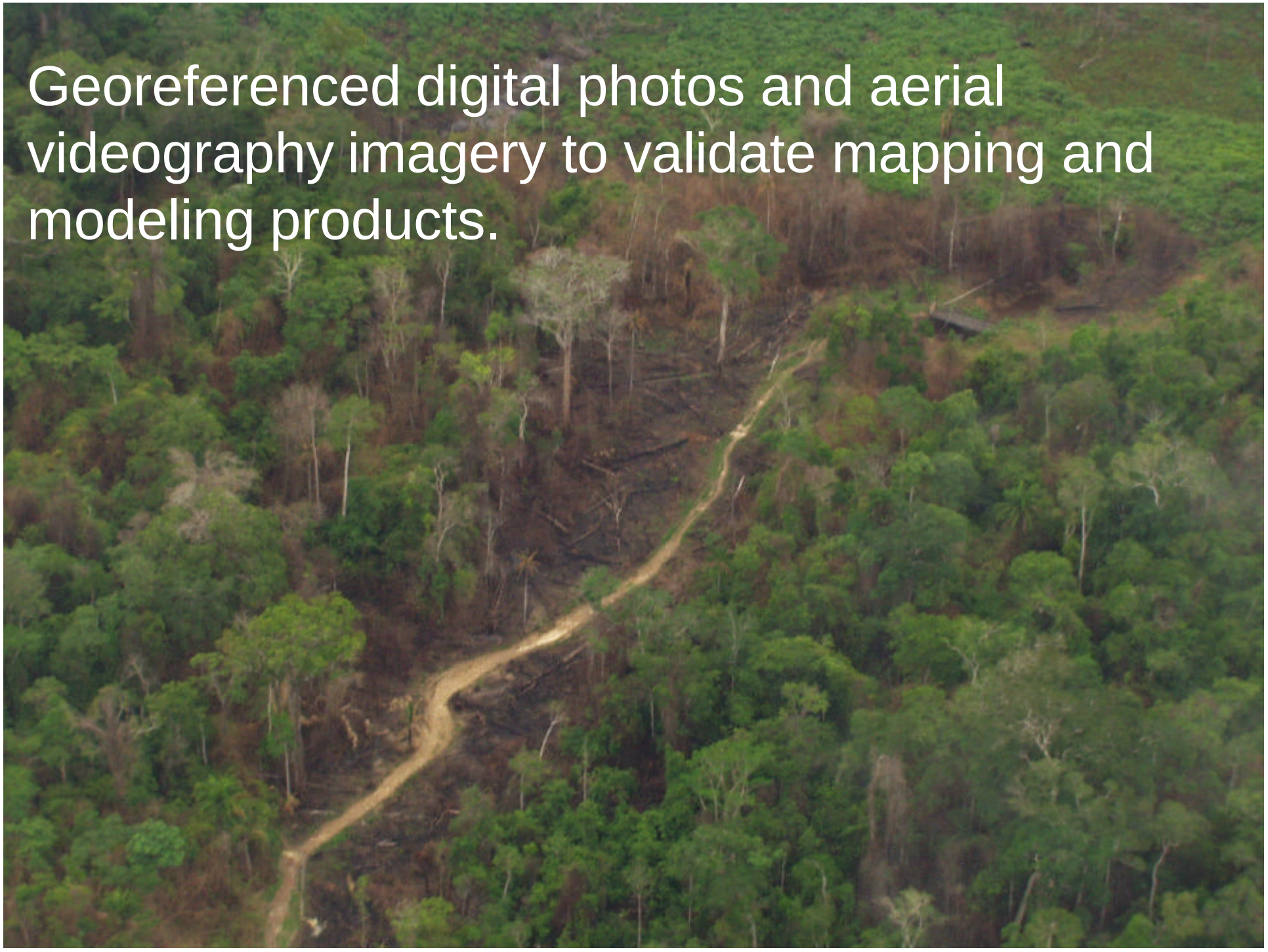
Field Validation

Forest transects

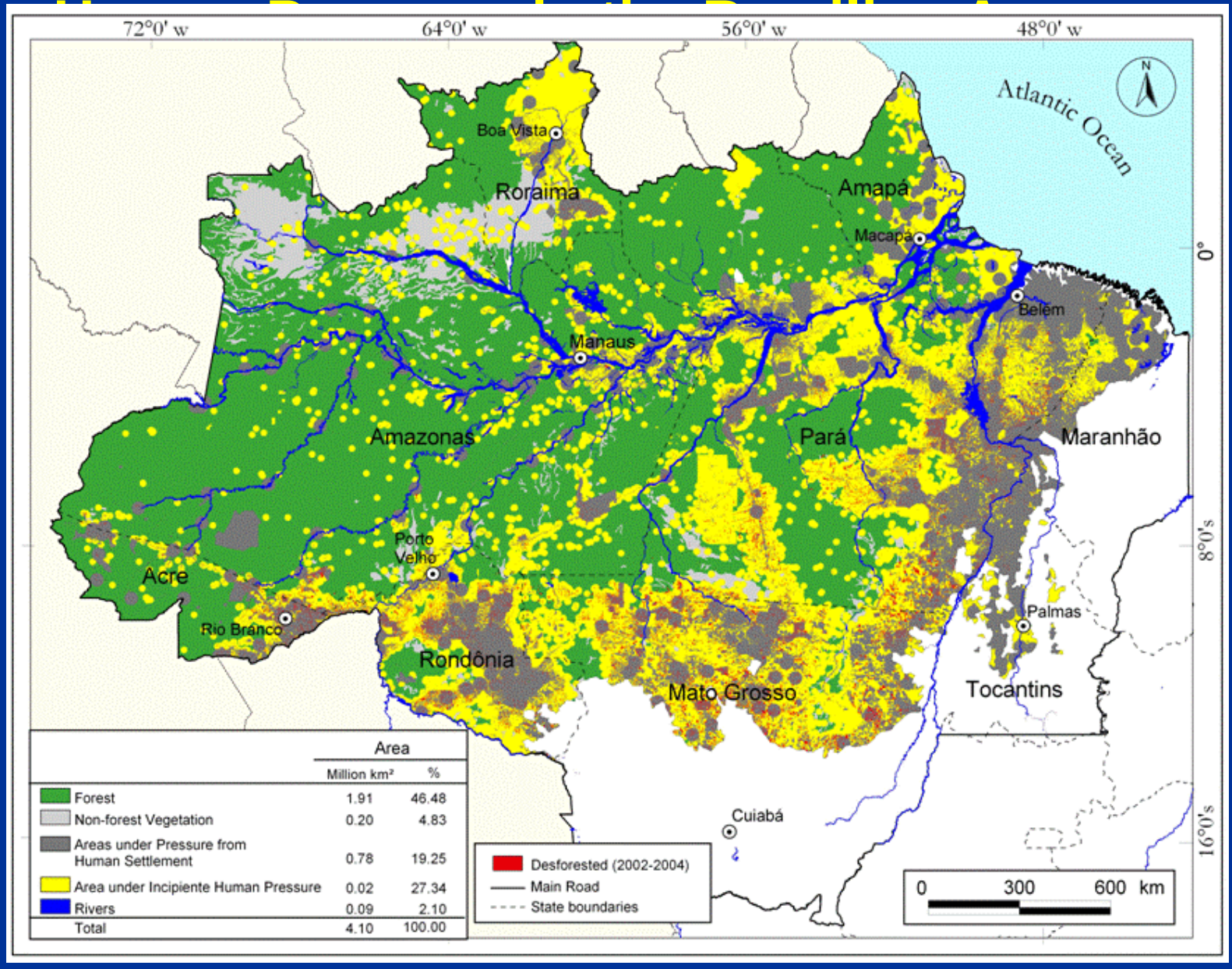
- Transects (10 m x 500 m = 0.5 ha)
  - Trees with DBH = 10 cm
  - Sub-plots (10 m x 10 m)
    - All trees
    - Forest canopy cover
    - Vine density
    - % soil exposed
    - % of dead vegetation

Aboveground biomass estimation

- Allometric equations


Georeferenced digital photos and aerial videography imagery to validate mapping and modeling products.

Example of Data and Information Integration:



Dissemination Strategy

- Scientific publications
- Policy briefs
- Training
- White papers
- Technical reports
- Books
- Seminars and conferences
- Meetings
- News media
- Internet

THE IMPACT CAN BE SEEN IN THE POPULAR PRESS . . .

The Economist

"Managing the rainforest"
May 12, 2001

O ESTADO DE S. PAULO

"The state of Acre will adopt a sustainable approach to harvesting mahogany"
April 13, 2002

O GLOBO

"Creating a map of sustainability in the Amazon"
August 30, 2002

Imazon has regularly been sought out by the press for reliable information (over 350 citations)

GAZETA MERCANTIL

"Ranching in the Amazon: profit and deforestation“
April 20, 1998

"São Paulo increases interest for certified wood“
July 8, 2002

FOLHA DE S.PAULO

"Study finds that forest management earns more"
November 24, 2000

FT FINANCIAL TIMES

"Brazilian use most Amazon timber"
July 24, 1999

ÉPOCA

"From the Amazon to the roofs of houses"
July 8, 2002

IMAZON'S AUDIENCE INCLUDES A WIDE VARIETY OF PLAYERS

Current Audience

- **National government**
  - Ministry of the environment
  - IBAMA
  - Justice Department
  - Forestry division
- **NGOs in Brazil and abroad**
- **Multi-lateral entities**
  - World Bank
  - Inter-American Development Bank
  - USAID, DFID, etc.

Original Audience

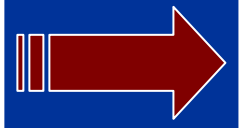
- **Scientific community**
- **NGOs doing work in the Amazon**

- **State governments**
  - Pará
  - Acre
  - Amapá
  - Amazonas
  - Mato Grosso
- **Private sector**
  - Loggers and sawmill owners
  - Banks
- **Local governments**
  - Belém
- **Popular media in Brazil and abroad**
- **Communities in the Amazon**

The role of NGOs on the Earth Observation Programs and their societal benefits

GEOSS *societal benefits* areas:

- Disasters
- Health
- Energy
- Climate
- Water
- Weather
- Ecosystems
- Agriculture
- Biodiversity



GEO Capacity Building Goals

- Use Earth Observation data and products
- Contribute to *in situ* observation to global networks
- Analyze and interpret data to be used by decision-makers
- Integrate Earth Observation data and information

Capacity Building Potential Activities for NGOs

- Identify NGOs working in the GEOSS societal benefit areas

- Evaluate NGOs current capacity (gap analysis):
  - Use Earth Observation data
  - Analyze and Interpret data
  - Collect field data
  - Disseminate relevant data to decision-makers

- Build capacity
  - Training
  - data access
  - infrastructure

- Develop a NGO network to be integrated to the main GEOSS Network

- Monitor progress in each GEOSS societal benefits area

Thanks!

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