

IAI/UM II Summer Institute

# Biomass Estimates for Extractive Reserves Management and CDM's Transference

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# Coordinator: Foster Brown

Carla

Daniel

André

~~Juan Pablo~~

Jane

Ignacio

Jeff

Angelica

Andrea

Glynis

# Introduction

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- Deforestation = ↑ Carbon release
- Extractive reserves → “guardians”  
(avoid deforestation, 10%)
- No deforestation → CDMs (Kyoto protocol)

# Evaluate

- deforestation (10%)
- situation at the household level

# Questions

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- What is the size of the area deforested by a family ("Seu João")?
- How much is the carbon stored by the family?
- How much money can be transferred?
- How these answers affect family decisions on land use?

# Study site



- State of Acre
- Reserva Extrativista Chico Mendes
- Seringal Porongaba
- Seu João colocação (family land)

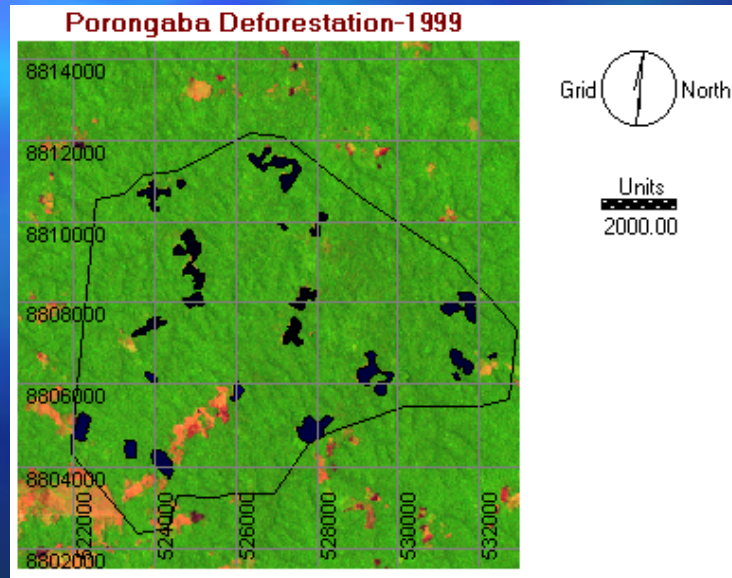
# What is the size of the area deforested by Seu João?

## SIZE:

- Coordinates borders
- Map (IDRISI)
- Area calculation

## AREA DEFORESTED:

- Satellite Image Classification (Landsat TM)



# Area Deforested

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Deforestation is 56 ha  
of 494 ha (colocação)



About 11%

*But uncertainty:*

1. Points to area
2. Calculation itself (IDRISI)

*About 10%*

Area of forest (carbon stores)  
is 438 ha  $\pm$  44 ha

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*Range: from 384 to 482 ha*

# How much is the carbon stored by a family?

438 ha  
(forest)

X

200 tons of C/ha  
total carbon

(Brown et al., 1992)

## But uncertainties:

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$$\text{Biomass} = f * d * D^2 * H[z^{-1} * y^{-1}]$$

For instance:

D= diameter at breast height

After calibration we estimated 3%  
uncertainty

# Considering uncertainties:

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Carbon stored is

$$87,6 * 10^3 \pm 18.000 \text{ tons}$$

# What are the implications?

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# CDMs transference

Price of Carbon (US\$/ton)	Value of stock	Uncertainty in Dollars
10	900 thousand	±200 thousand
20	2 millions	±400 thousand
50	4 millions	±1 million

Deforestation =  $11 \pm 1\%$

So, from 10 to 12



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*No penalties, but shift to  
Agroforestry*

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# Conclusions

**CDMs → agroforestry profitable**

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**Incentive to household strategies  
(economic evaluation)**



**Not only \$, but also how it is invested  
(health services? production?)**