ANTHROPOGENIC LAND-USE CHANGE AND THE DYNAMICS OF AMAZON FOREST BIOMASS

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Introduction

- Question: How does land-use change affect Amazon forest biomass ?
- Goals & Approach: Study forest biomass in fragmented, intact and regrowth forests, using a network of permanent plots in the Amazon.

Results

- Intact Amazonian forests may be a **globally significant carbon sink**, with biomass values higher than predicted.
- Fragmentation causes tree mortality, loss of biomass and may be a **source of greenhouse gases**. Losses are not offset by tree or liana recruitment
- ENSO droughts increase **tree mortality**, especially in fragments
- Soil fertility is important for tree and liana biomass
- Land-use history affects forest recovery after deforestation.
- Future - Examine development trends in Amazon basin and extrapolate our results. Study long-term dynamics of biomass in anthropogenic landscapes.

Conclusions

- Habitat fragmentation causes biomass loss and is an important source of greenhouse gases.
- Intact Amazonian forests are a globally significant carbon sink.
- Publications:

*Gascon et al. (in press) ***Science*** *Laurance et al. (in press) *Ecology* *Williamson et al. (in press) *Cons.Biol.* *Laurance et al. (2000) ***Nature***. *Laurance (2000) *TREE* *Laurance et al. (2000) *Oryx* *Laurance (2000) *Envir. Mon. & Assess.* *Mesquita et al. (1999) *Biol. Cons.* *Nelson et al. (1999) *For. Ecol.& Man.* *Laurance (1999) *Biol. Cons.* *Laurance et al. (1999) *For. Ecol. & Man.* *Laurance et al. (1999) *Ecol. App.* *Laurance and Fearnside (1999) *TREE* *Mesquita (1999) & Williamson et al (1999) *Floresta Amazônica* *Laurance et al. (1998) ***Science*** *Laurance et al. (1998) *Ecology* *Phillips et al. (1998) ***Science*** *Laurance et al. (1997) ***Science*** *Mesquita et al. (1998) *Soil Biol.& Bio.* *Laurance (1998) *TREE* *Laurance et al. (1998) *Cons.Biol.* *Laurance et al. (1998) *For. Ecol. & Man*