SUMMARY

1. Issues tower flux sites can contribute
Regional and global climate changes
Role of the biosphere in the global C cycle
Mitigation of greenhouse effect and the C market
Ecosystem and climate models, Interdisciplinary scientific projects
2. Measuring surface exchanges: the eddy covariance method
Surface balance (radiation, water, energy)
The eddy covariance method used in flux towerx
3. Instrumentation
4. Estimating ecosystem fluxes
The concept of fetch, Spectral relationships, Averaging options
Energy closure
Diel and seasonal variability
Other ways of C losses
5. Monitoring sites over tropical ecosystems
Tropical forest
Savanna
Agrosystem (sugar cane)

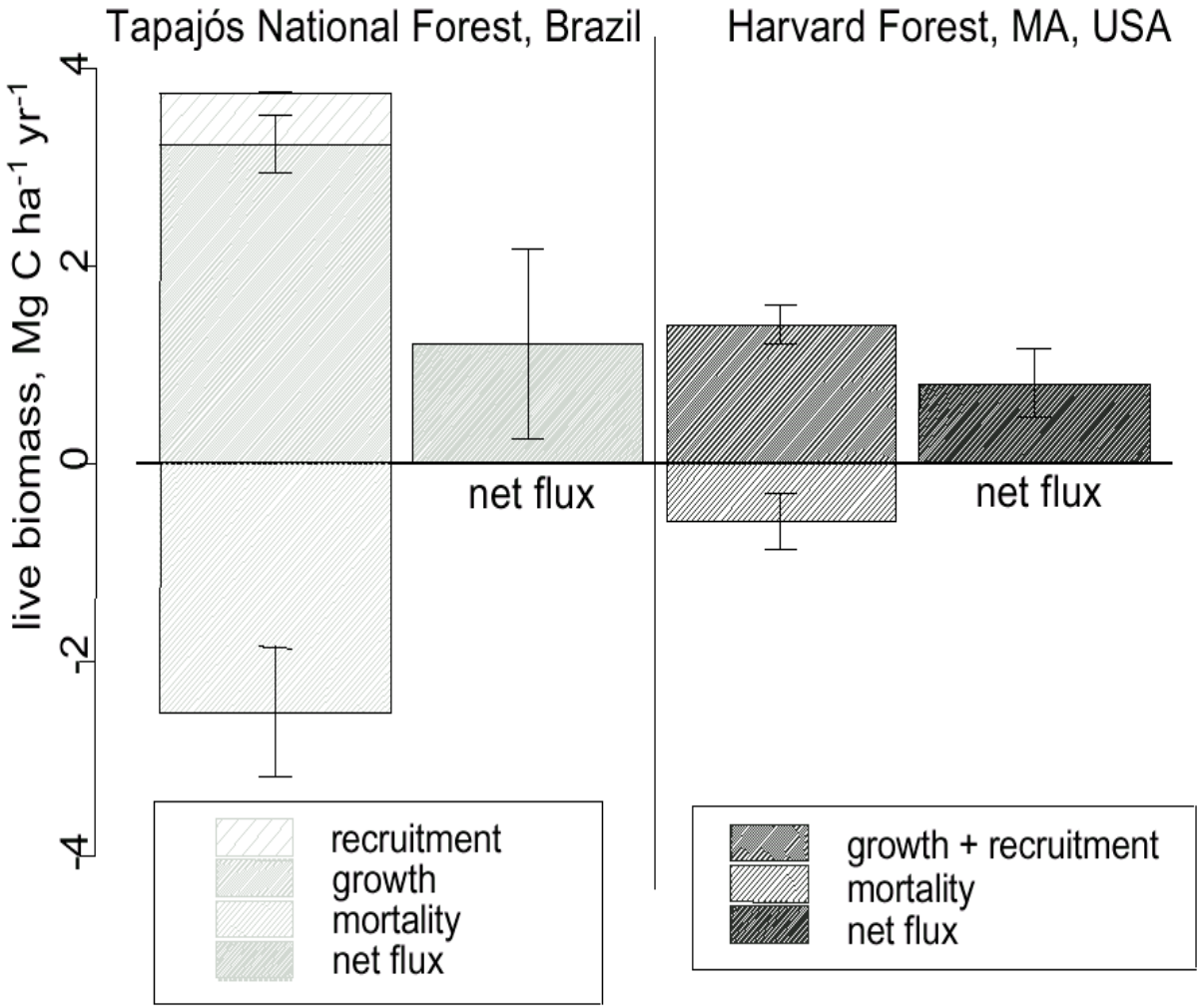
Using other methods to account other processes of CO2 emission

Forest

tropical x boreal:

- NPP (net primary productivity) well distinct
- Net fluxes similar

A. Rice (Ecol Appl 2003)



Sites where hydrology (discharge, flood) control the C exchanges

1. C might be exchanged as DIC (dissolved inorganic C) and DOC (dissolved organic C)

2. C might be lost to atmosphere as CO2 evasion (*pCO2*)


Collecting water samples for CO2 evasion and DOC,DIC transport
$CO_2\uparrow_{habitat} = K\,(C_{surface} - C_{atm\ equil})$
$Regional = \Sigma_{habitats}(km^2 \times CO_2\uparrow)$
source J. Richey
USP Universidade de São Paulo BRASIL

CO_2 Evasion from Waters of the Central Amazon

(Ritchey et al. , Nature 2002)

Σ: 1.2 ± . 3 Mg C ha^{-1} y^{-1} (basin ~ .5 Gt y^{-1})