BARCA 2007

Balanço Atmosférico Regional de Carbono na Amazônia
Regional Atmospheric Carbon Budget in Amazonia

Project sponsor: National Aeronautics and Space Administration
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Vision and goal:
Basin-scale fluxes of CO_2

- Integrate existent information from LBA studies with *new aircraft observations*
- Address the gap between local studies and global inverse studies
- Use a modeling framework combining high-resolution atmospheric transport with models of surface fluxes
- Produce optimally constrained diagnostic and predictive models of CO_2 and CO surface fluxes

Specifically, BARCA will:

-Directly quantify regional fluxes

-Establish relationships between LBA eddy flux towers and vertical concentration gradients

-Test central hypotheses that Amazonia is a net CO_2 source or sink

-Characterize horizontal and vertical distributions of CO_2

Aircraft data

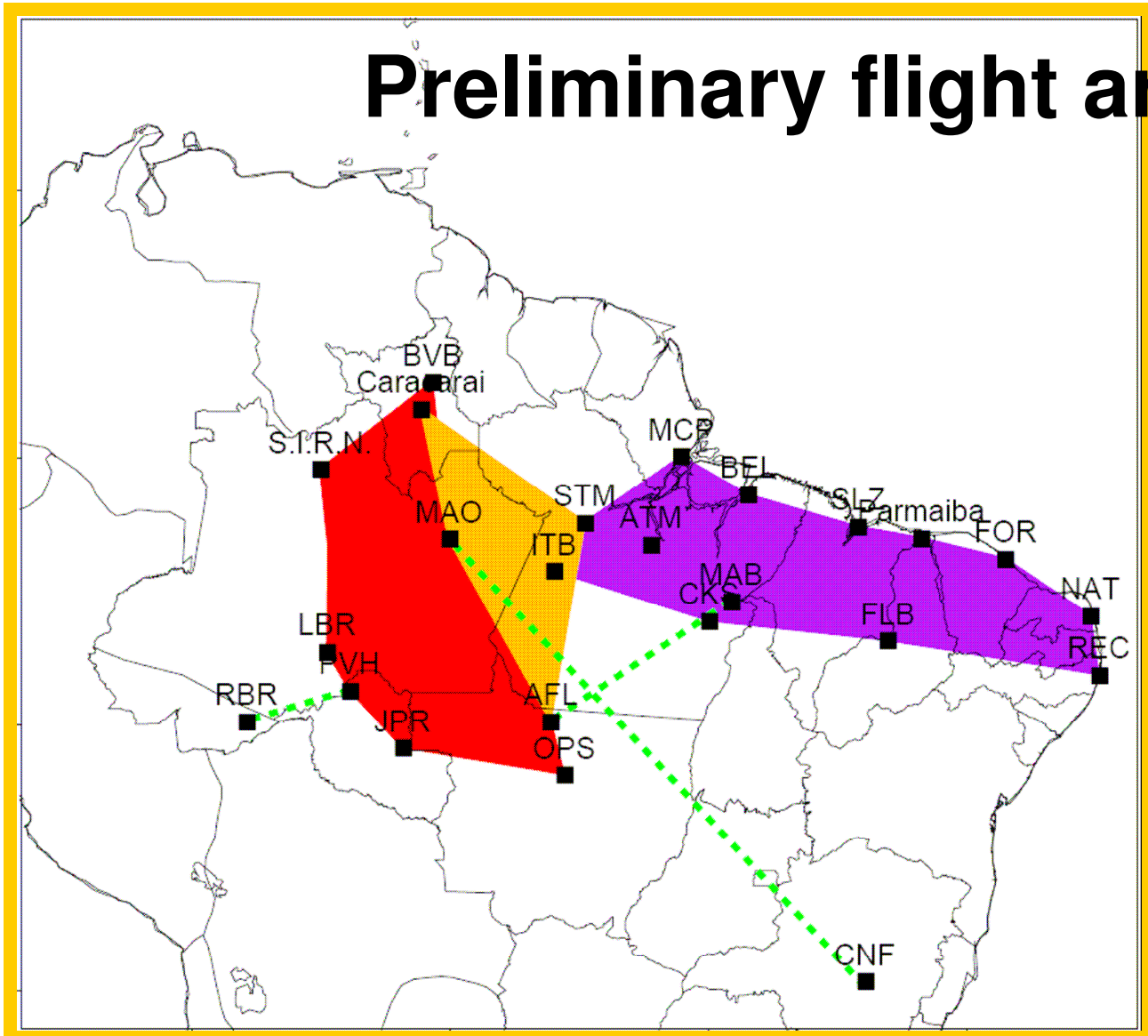
Lear Jet:

- 80 hrs flight time, ~20 days of data
- High frequency: CO_2, CO, O_3, H_2O, aerosols
- Every 70 seconds (NOAA UCATS GC):
  - N_2O, SF_6, CFC-11, -12, halon-1211
- Flasks (~400): N_2O, CH_4, H_2, SF_6, CO_2 (inc ^{13}C, ^{18}O), O_2/N_2

Bandeirante:

- High frequency: CO_2, CO, O_3, H_2O, aerosols
- Flasks (~325): N_2O, CH_4, H_2, SF_6, CO_2 (inc ^{13}C, ^{18}O)

Preliminary flight areas



Lagrangian regional experiments

Large-scale surveys

Scheduled to begin integration and test flights >29 Oct
Research flights commencing >14 Nov

Additional data

- Radiosonde
- Ozonesonde
- LBA towers and INPE-Natal station
  - Continuous high precision CO_2, CO, CH_4, N_2O