ATMOSPHERE TRACE GASES STUDIES IN URBAN AND REMOTE AREA

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The Large Scale Biosphere-Atmosphere Experiment in Amazonian experiment - LBA A - Trace Gases Studies in different Places of Amazonia The LBA/SMOCC 2002 experiment (Smoke Aerosols, Clouds, Rainfall and Climate) is part of LBA experiment (Large Scale Biosphere - Atmosphere Experiment) was aimed at understanding the connection between the composition and abundance of biomass burning aerosol, and its climatic effects, in particular on cloud structure and physics. This experiment was performed in Rondônia State, west of Amazonia, Brazil in a pasture site. This is a region in Amazonia that is severally perturbed by biomass burning emissions. The experiment was run during September to November 2002. This periods is dry season when happens the peak of biomass burning in this part of Amazonia and the campaign running until start wet season in November. The concentrations of O₃, CO and NOx were measured simultaneously with aerosol mass, light scattering and absorption. Several meteorological parameters were also monitored. B - Isoprene Emissions Seasonality in the Amazon Basin Tropical regions are responsible for the major part of isoprene emissions from the earth's surface. Usually, the estimates of isoprene emission consider the temperature, PAR, LAI and specific emissions factors for the ecosystem. One year of weekly samples in the Amazon basin in 4 different places shows that the hydrological cycle produces a strong seasonality in isoprene emissions. Volatile organic compounds (VOC) have a major influence on the atmospheric oxidative capacity, greenhouse gas concentration and the formation of aerosols, which implies a crucial role for VOCs in climate forcing. Considering the importance of tropical biomes in global VOC impacts, these regions have been the least investigated to date, and flux estimates have high uncertainties. The objective was to study the variability during the year (2001/2002) in four different places in Amazônia. In Para state, in the Floresta Nacional do Tapajos, the studies took place in a primary forest site (Km 67 BR 163) and other at a forest where selective logging is taking place, Km 83 of BR 163. In Rondonia state the measurements were made in a primary forest (Reserva biológica do Jaru) and in a pasture site (Abracos tower). The samples were made at two heights to obtain gradient fluxes (64m and 54m in FLONA-Tapajós towers Km 67 and 83, 60m and 50m in Rebio Jarú tower and 8m and 3m in the pasture site). High seasonality was observed at all sites. The average concentrations during the wet season, for 50m height in the two primary forests, were 1.8ppb and 4.4ppb, and during the dry season were 3.1ppb and 5.2ppb at the Flona-Tapajos and Rebio Jarú, respectively. Air pollution measurements in São Paulo (FIG.1) it was made 2 sampling campaigns to following trace gases measurements: CO, NOx and $\mathsf{O}_{\scriptscriptstyle 3}$ in winter and summer period. Meteorological data was collected to understand the transport process of these compounds. It was used a sampling tube installed in a tower 30m higher. The São Paulo city area is located in the south eastern part of São Paulo state. The pollution in the urban area of São Paulo city is mainly related with vehicular emissions and secondary with industrial emissions.

The metropolitan area of São Paulo suffers from heavy air pollution, for both gases and aerosol particles. Greenhouse Gases Study in the Amazonia Atmosphere This project is part of the LBA project called "Vertical profiles of carbon dioxide and other trace gas species over Amazon basin using small aircraft". Since December 2000 it was measured vertical profiles of CO₂₁ CH₄, CO₄ H₂, N₂O and SF₆ above central Amazonian region and Brazil coast. Samples are collected aboard light aircraft between the surface and either 4 km (Santarém) or 5 km (Fortaleza) using the NOAA/CMDL semi-automatic portable flask package (PFP). Until the end of 2003 the PFP's were sent from Boulder, Colorado to Brazil, where they are filled, and then sent back to Colorado for analysis. The strategy was changed to increase the frequency of measurements, which was severely hampered due to problems inherent in shipping samples between Brazil and the United States. In order to accomplish this, a replica of the NOAA/CMDL trace gas analysis system was developed in Boulder by the CDML researches and Dra. Luciana Gatti (IPEN/LQA). It was started to work in May 2004 at IPEN/LQA, and now samples collected in Santarém and Manaus are measured by MAGICC system (FIG.2). Financing by MCT, NOAA, CNPq and FAPESP.



FIGURE 1 - Air pollution measurements in IPEN local.



FIGURE 2 - Magicc-3 Mutiple analysis of gases influence climate change.