

TRACE GAS MEASUREMENTS AT THE PANTANAL

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The Pantanal is a floodplain region with a surface of approximately 140.000 km² located south-west of Mato Grosso and north-west of Mato Grosso do Sul States, fed by the Paraguai River and its tributaries. Topographic relief and degree of inundation divide the Pantanal into three main subregions: high elevation Pantanal "Alto Pantanal", middle elevation Pantanal "Médio Pantanal" and low-lying Pantanal "Baixo Pantanal". During the rainy season the water column changes from 30 cm to 2 m. Savana ("cerado") is the main vegetation type. It has a tropic semihumid climate with an annual mean temperature of 25°C.

Swamp regions are known to have a great potential to produce methane (CH₄), an important gas of the Greenhouse Effect, and atmospheric chemistry. The Pantanal represents an important environment for research, not only for methane, but other gases related with the climate issue, as nitrous oxide (N₂O), and gases emitted from biomass burning that occurs in its surroundings, such as carbon monoxide (CO), carbon dioxide (CO₂) and tropospheric ozone (O₃).

In order to obtain information on this environment, the Instituto Nacional de Pesquisas Espaciais - INPE - in cooperation with the Universidade Federal do Mato Grosso do Sul, performed an experiment

during August 17-20, 1993 (dry season) at Passo do Lontra village (Baixo Pantanal) as well as profiles with the INPE aircraft. Preliminary results for carbon dioxide and carbon monoxide are displayed in Figures 1 and 2, respectively. Profiles for CO show higher values than those obtained during the wet season TRACE-A experiment, (CO average: 80 ppbv), for all altitudes. Its source is related to biomass burning in the Pantanal's surroundings. Profiles for carbon dioxide present the same increase and a peak of concentration near 2.5 km that may be due to an inversion layer. Samples of air obtained to study methane and nitrous oxide are being analyzed.

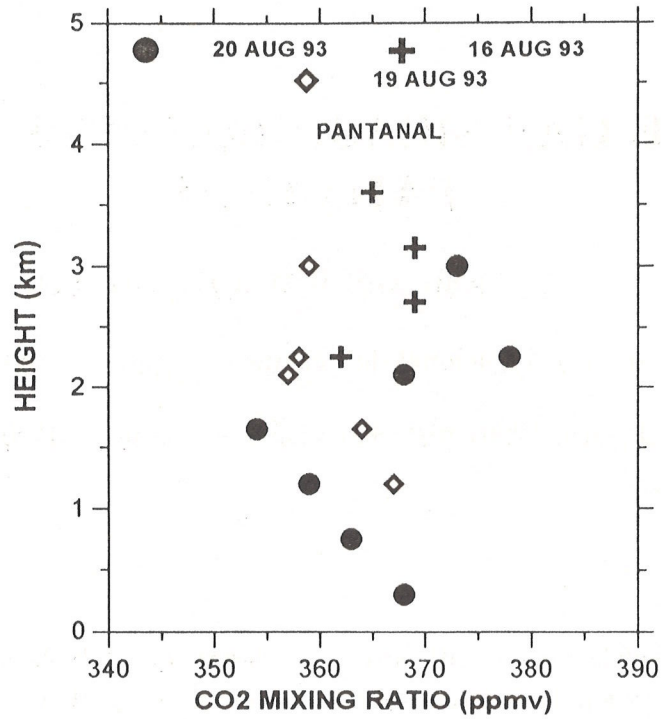


Figure 1. Carbon dioxide mixing ratios obtained in the Pantanal region on three days in August 1993.

Concentrações de dióxido de carbono obtidas na região do Pantanal em três dias de agosto de 1993.

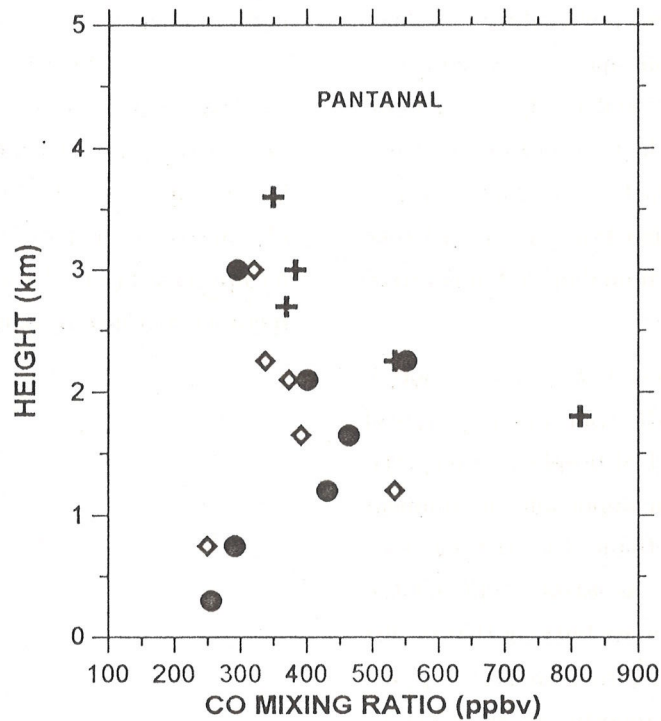


Figure 2. Carbon monoxide mixing ratios obtained in the Pantanal region on three days in August 1993.

Concentrações de monóxido de carbono obtidas na região do Pantanal em três dias de agosto de 1993.