

Nocturnal Variability in CO₂ Concentration in Amazonian Pasture: Episodes of Fast Decline

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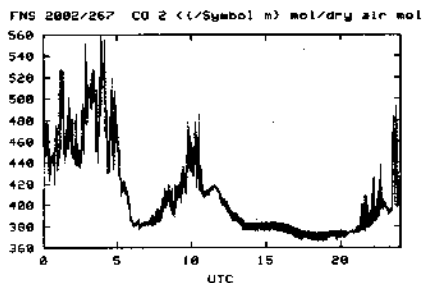
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The studies of nocturnal boundary layer has increased nowadays. The reason for it is that many meteorological phenomena can act isolated or jointly to produce effects that generate great modifications in the surface meteorological variable fields during the night, specially under strong stability conditions. Examples of those phenomena are low level jets, gravity waves and katabatic winds. In order to develop this study, turbulent wind velocity (u, v, w components), temperature, humidity and CO₂ concentration data sets, obtained during dry to wet seasons in a pasture in a deforested area in Amazonian were used. The data were measured in 2002 September (dry-season) to November (wet-season), as a part of the Brazil/European Union LBA Tower Consortium, in southwestern part of Amazonian region and Dry-toWet RACCI/LBA Campaign. Measurements are made at a micrometeorological tower located in the Nossa Senhora Farm (10o 045.7' S, 62o 21.4' W) county of Ouro Preto D'Oeste. The fast response wind speed and temperature measurements, sampled at 10.42 Hz rate, were made using a three-dimensional sonic anemometer (Solent A1012R, Gill Instruments), at a height of 4 m. The variability of the CO₂ concentration was analyzed with special attention during the nocturnal period. Many interesting situations were noticed during stable nights without rainfall. After the CO₂ concentration presented an increasing trend, an abrupt fall in its concentrations values have occurred (see figure). Based on the analyses of the vertical profile and surface meteorological variable, a physical explanation for this phenomenon has been proposed. This kind of phenomena is crucial to a better understanding of the CO₂ budget in the Amazônia.

Equação:



Submetido por Margarete Oliveira Domingues em 18-MAR-2004

Tema Científico do LBA: PC (Física do Clima)

Tipo de Apresentação: Poster

ID do Resumo: 331