

GEOPHYSICAL RESEARCH LETTERS, VOL. 16, NO. 5, PP. 469-472, 1989
doi:10.1029/GL016i005p00469

http://europa.agu.org/?view=article&uri=/journals/gl/GL016i005p00469.xml&t=gl,GL016i005p00469_Kirchhoff

Biomass burning in Amazonia: Seasonal effects on atmospheric O₃ and CO

[V. W. J. H. Kirchhoff](#)

Instituto de Pesquisas Espaciais - INPE, SP, Brasil

[A. W. Setzer](#)

Instituto de Pesquisas Espaciais - INPE, SP, Brasil

[M. C. Pereira](#)

Instituto de Pesquisas Espaciais - INPE, SP, Brasil

The practice of shifting agriculture and the need for the colonization of new land areas determine each year considerable amounts of biomass burnings in the Brazilian Amazon region. This paper describes new results on the effects of these burnings on the composition of the lower atmosphere. Simultaneous measurements of O₃ and CO are described at two sites: one within the burning region of central Brazil, Cuiabá (16°S, 56°W), and another one away from it, Natal (6°S, 35°W). The data obtained so far covers the 1987, 1988 dry season periods, when the burning intensity is maximum (July, August, September), and the wet season period of 1988, when practically no burnings occur. Both sites show minimum concentrations of O₃ and CO in the wet season, with monthly averages in March of about 12 and 140 ppbv (parts per billion by volume) for Cuiabá, and about 10 and 80 ppbv, for Natal. While the seasonal increase at Natal is of the order of a factor of 2, the seasonal increase at Cuiabá for 1987 was about a factor of 4, and a factor of 6 for 1988. For the month of September 1987, O₃ and CO had concentrations of 23 and 110 ppbv for Natal, whereas at Cuiabá these concentrations were 41 and 470 ppbv. The larger concentrations observed in September correlate well with the larger number of fires detected by the infrared radiometer on the NOAA - 9 satellite.