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Surface ozone in the urban area of Manaus, Amazonas, Brazil

Rodrigo Augusto Ferreira de Souza¹, Patrícia Santos Costa², Claudomiro Silva², Ricardo Moreton Godoi³, Scot T Martin⁴, Julio Tota⁵, Henrique M Barbosa⁶, Theotonio Pauliquevis⁷, Joel Ferreira De Brito⁶, Paulo Artaxo⁸, Antonio O Manzi⁹, Stefan Aiko Wolf² and Glauber G. Cirino¹⁰, (1)Organization Not Listed, Washington, DC, United States, (2)INPA National Institute of Amazonian Research, Climate, Manaus, Brazil, (3)UFPR Federal University of Parana, Parano, Brazil, (4)Harvard University, Cambridge, MA, United States, (5)Federal University of Western Para, Santarem, Brazil, (6)University of Sao Paulo, Sao Paulo, United States, (7)Universidade Federal de São Paulo, Doadema, Brazil, (8)USP University of Sao Paulo, São Paulo, Brazil, (9)Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil, (10)National Institute for Amazon Research (INPA), Manaus, Brazil

Abstract Text:

When nitrogen oxides from vehicle and industrial emissions mix with volatile organic compounds from trees and plants with exposure to sunlight, a chemical reaction occurs contributing to ground-level ozone pollution. The preliminary results of the surface ozone study in urban area of Manaus, Amazonas State, Brazil, are presented for the first intensive operating period (IOP1) of the GoAmazon experiment (February/March 2014). Photochemical ozone production was found to be a regular process, with an afternoon maximum of the ozone mixing ratio of lower than 20 ppbv for cloudy days or clear sky weather. Typical ozone concentrations at mid-day were low (about 10 ppb). On the other hand, several high-value ozone episodes with surface ozone mixing ratios up to three times larger were registered during the dry season of 2013 (September/October). At the beginning of the wet season, the ozone concentration in Manaus decreased significantly, but diurnal variations can be found during the days with rainfall and other fast changes of meteorological conditions. Possible explanations of the nature of pulsations are discussed. Photochemical ozone production by local urban plumes of Manaus is named as a first possible source of the ozone concentration and biomass burning or power plant emissions are suggested as an alternative or an additional source.

Session Selection: Anthropogenic-Biogenic Interactions Affecting the Atmospheric Chemistry and Physics over Tropical Rainforests

Title: Surface ozone in the urban area of Manaus, Amazonas, Brazil
Submitter's E-mail Address: souzaraf@gmail.com
Preferred Presentation Format: Poster Requested

First Presenting Author

Presenting Author

Rodrigo Augusto Ferreira de Souza

Primary Email: souzaraf@gmail.com

Affiliation(s):

Organization Not Listed
Washington DC (United States)