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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Impact of Manaus City on the Amazon Green Ocean atmosphere: ozone production, precursor sensitivity and aerosol load" *by* U. Kuhn et al.

Anonymous Referee #1

Received and published: 29 June 2010

March 21, 2010 Review of Kuhn et al., Impact of Manaus City on the Amazon Green Ocean Atmosphere: Ozone production....

SYNOPSIS-

This paper attempts to describe how emissions from Manaus City, including power plant effluent, affects the composition of the region downwind of the city up to 100 km. The interpretation and modeling are based on aircraft measurements taken from the surface to about 2 km during July 2001 over the city and then in a series of racetracks perpendicular to the Manaus plume, at 10 km, 40 km, 70 km, 100 km downwind. The measurements from an EMB Bandeiriante aircraft included ozone, CO, VOC with

emphasis on isoprene and relatives; NO, CN, SMPS, H2O. Most of the information is about the flight of 18 July, with some information from 15 July. Flight tracks and data summarized are illustrated, ozone-CO correlations, correlations for Del-CCN and CO. The emphasis is on ozone formation, including the effect of power plants, relative contributions of different processes to ozone formation and potential impacts of aerosol initiation.

SUMMARY RECOMMENDATION

The paper should be published. The concept of a green ocean is illuminating and the idea of following ozone evolution in this environment with a view toward development policy highly commends this paper for ACP. The sampling was intelligently performed and the authors are to be congratulated for carrying out synthesis of the information. Also of interest are comparisons made between 1985, when some of the first Amazon "green ocean" atmospheric composition flights were made, and 2001. However, the paper is too long and diffuse is some places. I suggest removing selected figures and putting aerosol material in a separate paper.

PAGE 3- Line 25 - references on OH - Logan, JA; PRATHER MJ; WOFSY SC; MCELROY MB. TROPOSPHERIC CHEMISTRY - A GLOBAL PERSPECTIVE ... Look up in JGR also, Thompson, AM, Science, 1992

PAGE 3 – Line 29 - The word "being" is not needed

PAGE 4- lines 18-33. PAGES 10, 11: ABOUT PARTICLE AND RADIATION, IN GENERAL IN THE PAPER. Introduces an important topic but this one is not carried through the paper as fully nor with the significance as the trace gas story and it adds length. Shorten or eliminate. If you do so, Figures 12 and 13 can be removed along with sections like page 10, lines 41 to end, and page 11 up to line 40.

PAGES 13 and 14. This is the most **original** and compelling part of the paper. LIKEWISE SEC 3.5 - SEC 3.7 is excellent and the most important analysis!

ACPD

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SECTION 3.6 - This is useful and good but diffuses the paper. The authors are recommended to set this aside in a separate publication!

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 13091, 2010.