

Interactive comment on “Power Plant Fuel Switching and Air Quality in a Tropical Forested Environment” by Adan S. S. Medeiros et al.

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The manuscript brings an interesting contribution to the evaluation of the air pollution conditions associated with the production of thermoelectric energy in Manaus, Amazonas, Brazil. In particular, it presents modelling evidence based on an optimistic scenario of reducing the levels of atmospheric pollutants that participate in photochemical reactions to generate hazardous secondary pollutants. The effective variable considered in the scenarios is the change in the type of fuel used in the thermoelectric power plants of Manaus, a metropolis located in the Amazon forest. The results show a marked decrease in the O₃ level as a consequence of the fuel switching from diesel to natural gas mainly.

Recommendations to the Atmos. Chem. Phys.:

My recommendation to the journal ACP is the publication of the manuscript after a mandatory minor revision considering the following points:

Specific Comments:

* The authors could provide two additional explanatory paragraphs about the models "Regional Acid Deposition Model" Version 2 (RADM2) (Chang, 1991) and Model for Ozone and Related Tracers (MOZART-4) (Emmons et al., 2010).

* Would it be interesting to indicate if the emission rates of the thermoelectric plants refer to an uninterrupted operation?

* The inclusion of a graph for the observed annual cycle (e.g., with box plots) of the pollutants considered for Manaus, to permit a in depth discussion of the meteorological conditions which was related to the month period analysed.

* Characterizing the period of investigation from the meteorological point of view, in its synoptic and mesoscale aspects. Explaining the perturbations observed in the concentrations of pollutants observed (time series) in relation to the observed precipitation and possibility of wet deposition on the surface. In relation to the days without precipitation characterizing the mechanism of dry removal of the pollutants, qualitatively.

* Could the authors indicate that as a result of the wet removal process, the pollutants can be deposited/transferred on the surface, vegetation or indeed sent to the rivers. It could be indicated the superficial route when the meteorological conditions are of precipitation. It would be interesting to point out possible conservation routes rather than simply saying that the levels were decreasing. It could be explained this point better. Also the authors could also compare the concentration levels of sequential days in which the second day rains in Manaus. Or at least present a qualitative discussion.

* Presenting a better discussion on levels of background concentration associated with natural production by the forest and rivers.

Technical correction:

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Discussion paper



* Page 11 / line 255

Fix the orthographic flaw: "... The large differences ..."

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