Atmos. Chem. Phys. Discuss.,
doi:10.5194/acp-2016-1190-RC2, 2017

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Mobile and stationary sources of air pollutants in the Amazon rainforest: a numerical study with WRF-Chem model" *by* Sameh A. Abou Rafee et al.

H. Karan (Referee)

hugo@igeo.ufrj.br

Received and published: 23 March 2017

The manuscript presents a contribution to the understanding of the dispersion conditions of primary and secondary air pollutants in Manaus, AM, Brazil, on clear sky days, for a Brazilian metropolis surrounded by primary tropical forest.

The main shortcoming is the very short simulation period due to the reduced availability of observational data. Despite this deficiency and considering the scarcity of publications presenting a documented inventory, I can make the recommendation for publication after a minor but indispensable revision.

Three main points that should be considered in the minor revision to be made by the

Printer-friendly version

Discussion paper

authors are indicated below:

1. Show each focus of heat and smoke on the map of South America during the days of the experiment, obtained from satellite imagery. One might ask what can be stated about the pollutant plume emitted from each heat source, especially around Manaus, with trajectories within the PBL. If the heat sources were many, or a focus is highlighted from the others by the intensity, what would be the axis of the dispersing smoke plume in the vicinity of Manaus? In addition, what is the concentration of transient pollutants on the area of âĂŃâĂŃinterest? It is not enough to indicate in the text the absence of heat / smoke focus in the area because a distant focus may be the source of a pollutant feather that propagates through long trajectories to the vicinity of Manaus. Could you verify this?

2. Show if possible the spatial distribution of pollutant emission rates on the surface of the domain, graphically presenting the result of the inventory prepared and used. In addition, show corresponding two-dimensional figures. For the emission of CO2 and other pollutants of daytime variation, present maps of the emission rate every 3 hours over the 24 hour cycle.

3. Characterize the synoptic and mesoscale conditions present during the days of the numerical investigation. Satellite images are available? Look for the channels whose composition matches the image of air masses moving in the domain, thus doing to highlight the aerosol plumes if possible. Can this be done?

4. Spatial fields can be presented to characterize the synoptic condition: current lines and advection of equivalent potential temperature.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-1190, 2017.