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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Carbon monoxide and related trace gases and aerosols over the Amazon Basin during the wet and dry seasons" *by* M. O. Andreae et al.

Anonymous Referee #1

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Review, Andreae et al., "Carbon monoxide and related trace gases and aerosols over the Amazon Basin during the wet and dry seasons"

This paper describes the analysis of aircraft and ground-level measurements made in South America during a wet and dry season (2008-2009). The measurements are used to assess the impact of various air masses and sources on the atmospheric composition around the Amazon basin during these different seasons. Emissions from biomass burning are constrained. Further, the results are used to assess models that simulate CO in the region, and uncertainties associated with the model simulations are identified. Overall, this was a very well written and interesting paper. The authors apply

robust analysis and thoroughly explain the outcomes. The topic is relevant to Atmospheric Chemistry & Physics, and I recommend publication after a few minor comments are made.

Minor Comments: Page 8110, line 5: Use "that" instead of "which"

Section 2.3: What are the detection limits for the flask samples?

Section 2.5: I got a bit confused in the description of WRF-CHEM and WRF-GHG. Does WRF-GHG contain any chemistry, or is it purely a tracer model? Why were different physics and PBL schemes used? In the full chemistry simulations, what chemical mechanism is used? The authors state that the biogenic emissions are based on the MEGAN 2000 climatology. Did these have a diurnal variation?

Page 8120, line 25: The plane reached a ceiling of 4500m. What has the height of the PBL?

Page 8122, lines 20, 29, and figure 3: I am assuming that concentrations of the SF6 should be pptv; however line 20 uses ppbv. Can this be reviewed and corrected?

Page 8127, line 27-28: Does this also indicate that other anthropogenic sources (e.g., urban areas) didn't impact the Basin either?

Page 8133, second paragraph: Can uncertainties in the simulation of the PBL account for the observed uncertainties?

Page 8134, The authors address the model and the flight data comparison. Did they see any improvement in the simulated surface concentrations?

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 8107, 2012.