

***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 #2

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

The paper presents CO and aerosol results from two aircraft campaigns over the Amazon Basin, covering the wet and dry season. The authors contrast the biomass burning influences on the atmospheric composition in the two seasons, using fire tracers. High-resolution chemical transport model simulations were also conducted, and these were evaluated against the measurement data. While the models' results agree with the importance of biomass burning emissions, there are several discrepancies with the measurements. The authors suggest that these are related to problems with the fire

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emissions used in the models, as well as related to model parameters, such as spatial and vertical transport.

This is a well written paper with a thorough, but focused analysis, and with clear suggestions of areas to increase our understanding, through further measurement or model improvements. The historical perspective on chemical observations over the Amazon in the introduction is a particularly good addition. As such, I recommend its publication in ACP after addressing a few minor corrections, which are mainly typographical in nature. (I have tried not to repeat the comments of the first reviewer).

MINOR COMMENTS/CORRECTIONS:

P8109, L19 (and throughout): I think “VOCs” reads better when talking about volatile organic compoundS

P8110, L5: “. . .fire season, occurring in the period from. . .”

P8110, L21: To clarify, is oxidation of isoprene the largest source of CO in the summer for the USA?

P8110, L22: Is there a suitable reference for the first sentence?

P8115, L22: What is Q?

P8116, L5: “. . .with most of the delays due to customs.”

Section 2.4: Could these locations be indicated on a map? (e.g. Fig. 1)

Section 2.5: Might be easier to read if there were sub-headings for the models

P8818, L2: “. . .an ensemble of 100 particles was released . . .” (check tense throughout here too)

P8818, L13: Define GOES, AVHRR and MODIS

P8821, L15: Clearer to identify the figure panels with their letters: “. . .shows (a) the distribution of fires. . .(c) the 10-day . . .”

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P8122, L6: Should it be Fig 2d? (not 2f)

P8122, L20: ppb -> ppt (?)

P8122, L26: "On the other hand, the SF6 results from BARCA-B in Fig 3b support. . ."

Section 4: Check tense throughout. E.g. P8136, L1: ". . .we presented. . .analyzed**"

*although should be analysed if ACP uses British English (. . .does it!?)

P8136, L7. "...Southern Hemisphere. During BARCA-B. . .Northern Hemisphere, while mid-tropospheric airmasses came from both hemispheres."

P8136, L24: "...residual smoldering combustion (RSC)."

P8137, L13: delete "(ca. 10 ppb)" since said in previous sentence

P8138, L2: "...observations, against those. . ."

P8138, L8: ". . .in models), as well as to representation of smoke injection height, the choice of model resolution, and the reliability of. . ."

Figure 2, bottom panels: Could the flight tracks be made a different color, so they stand out?

Figure 6, 8, captions: What is "SPSS convention"?

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