

Interactive comment on “Nitrogen oxides measurements in an Amazon site and enhancements associated with a cold front” by A. M. Cordova et al.

Anonymous Referee #1

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General comments:

This is a very well written case study of long-range transport of biomass burning emissions to a remote site in the Amazon basin. The authors clearly document chemical, aerosol, meteorological, and satellite observations, present trajectory information, and conclude by presenting regional model output implicating long-range transport as the cause of the observed gas- and aerosol-phase enhancements. The authors do not attempt to generalize from these data, and while limited in scope, this report is a very nice example of a descriptive paper documenting a geophysical occurrence that is of recent scientific interest.

Specific comments:

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In general this is very well done; the conclusions are strongly supported by the data that are shown, the overall intent is well defined, and the logical progression is refreshingly clear. The only question I had was in regard to the uncertainties in gas-phase data. No experimental uncertainties are provided, and some estimation of the magnitude of the potential errors would be welcome.

Further, the description of the NO₂ measurement is quite sparse, but it seems that the authors used a system that relies on thermal surface conversion to NO as a means of quantifying atmospheric NO₂. If that was the case (no details on the NO₂ conversion were given in the text) the authors might indicate that this method has some well-documented shortcomings (e.g., Fehsenfeld et al., JGR, 95, 3579-3597 (1990)), and likely measures the sum of NO₂ + PAN compounds + some fraction of ambient HNO₃. In the Amazon site, PAN compounds could potentially bias the "NO₂" measurement by a factor several times larger than the actual ambient NO₂ concentration. In any case, please state what conversion technique was used, and what confidence in the resulting NO₂ data they have.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 2301, 2004.

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