

Interactive comment on “ACE-FTS observation of a young biomass burning plume: first reported measurements of C₂H₄, C₃H₆O, H₂CO and PAN by infrared occultation from space” by P.-F. Coheur et al.

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General Comments

This paper describes the space-based detection of several trace gases from a fire in Africa. These represent the first measurements of these species from space. While this is essentially a single observation and is limited in that sense, the data presented provide some important information about how biomass plumes can develop, and give some insight into their potential effect on the chemistry of the lower atmosphere.

Specific Comments

I think this is the first detection from space of these species, and if so, the qualifiers such as “infrared”, “solar-occultation”, and “simultaneous” need not be included.

I note the absence of any CO₂ retrievals. They are probably not reliable to an extent that would be useful, but this should be explained.

How long was the transport model run? Did you start the model far enough back in time? The difference between Fig 3a and 3b shows that a large amount of CO is not from biomass burning. What are the other sources of CO and how do you include them in your model?

In Sec 2.2 you say the V2.2 vmrs are systematically readjusted. How big are these adjustments? This would be useful information for those using ACE-FTSV2.2.

In Sec 3.2 you describe the top panel of Fig 5 as coming from previously reported results. It's not completely clear that you are talking about the same occultation, ss11607. This should be clarified.

Sec 3.3 you mention the likelihood of strong vertical uplift to explain the relatively high altitude for such a young plume. If possible, this should be corroborated with the ECMEF data or some other source.

Fig 1. You should mention the range of dates that the data were collected in the figure caption.

Fig 5. I'm confused about the scales. For example, the top left panel shows an HCOOH absorption feature with transmittance of ~0.8. Wouldn't neglecting molecule this give a residual much bigger than 0.05?

Fig 6. The retrieved vmrs do not indicate any type of uncertainties, nor is this addressed in the text. These needs to be discussed.

Technical Corrections

Fig 2 belongs in Fig 1.

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