Atmos. Chem. Phys. Discuss., 4, S2943–S2944, 2004
www.atmos-chem-phys.org/acpd/4/S2943/
European Geosciences Union


Atmospheric Chemistry and Physics Discussions



# *Interactive comment on* "Oxygenated compounds in aged biomass burning plumes over the Eastern Mediterranean: evidence for strong secondary production of methanol and acetone" *by* R. Holzinger et al.

**R. Holzinger et al.**

Received and published: 13 December 2004

Many thanks also to referee #2 for providing an insightful review. After some consideration we decided to stick with the current title which reflects the main message of our paper. The results of the general analysis of acetonitrile mixing ratios are included in the abstract and therefore this part should be easily accessible to literature inquiries.

With respect to specific comments/experimental:

- The primary ion signal typically was 4-6 million counts per second.

- Actually methanol, acetonitrile, and acetone mixing ratios were calibrated against the gas standard by fine-tuning parameters like reaction time, reaction rate constant, and transmission. We will clarify this in the revised manuscript.

- The relatively high detection limit of 0.5 nmol/mol was due to relatively high count rates when the sample was led through the zero-air catalyst. Therefore high background values have been subtracted from the methanol signal. Methanol mixing ratios below 0.5 nmol/mol and even negative values have been technically computed, but they are not significantly different from zero.

With respect to specific comments/bb-plumes:

- We will clarify the section explaining the calculation of the NEMRs.

- page 6326, 22ff: We consider 4.5E6 OH molecules per cubic centimeter to be representative average value for the region and the altitude-range in which most of the biomass burning plumes were found (below 4km). Therefore most likely the acetonitrile/CO ratio is significantly changed by photo-chemical degradation of CO. On the other hand a high nitrogen content of the biomass fuel might also cause high acetonitrile/CO ratios. Quite possible our observations are a combination of both these possible reasons.

- We agree with the referees' thoughts on possible reasons why we observed photochemical production of acetone and methanol over the Eastern Mediterranean while this was not as clearly observed over the Pacific Ocean (Singh et al 2004). However, we think it is beyond the scope of our paper to start this discussion.

- The MATCH model discrepancy for propane has been attributed to a massive underestimate in propane emissions due to use of an outdated emissions inventory. (Gros et al 2003). It is nonetheless true that accounting for secondary production in biomass burning will help for better acetone and methanol prediction.

---

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 6321, 2004.



**ACPD**

4, S2943–S2944, 2004

Interactive Comment