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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Temperature-induced volatility of molecular markers in ambient airborne particulate matter" *by* C. R. Ruehl et al.

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Atmospheric Chemistry and Physics Discussion – acpd-10-20329-2010, Temperature-induced volatility of molecular markers in ambient airborne particulate matter, by Ruehl et al. (9/16/10)

This paper describes the results of measurements on the volatility of different classes or organic compounds in ambient aerosols using collocated unheated and heated sampling systems. The paper is well written and the results are presented clearly. The results demonstrate that hopanes, steranes and n-alkanes are volatile, especially in summer. The volatility was explained in terms of the potential nature of the particulate absorbent phase of the aerosol. I believe this paper presents high quality, useful, and interesting results.

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Interactive Discussion

Discussion Paper

Comments:

1) Is the rural site at Angiola?

2) The sampling program length was only 5 days. The variations in ambient temperature and probably source mix may not have been seasonally representative. What does this imply about the general representativeness of the volatility results?

3) I'm confused on the issue of the backup filter subtraction and the implication this has for inferences on absorbent-mediated volatility. The front filter absorbs ambient VOC and absorbents in the aerosol on the front filter influence volatility. Since there are no absorbents on the backup filter (except the filter itself), it seems there is an inconsistency in using the backup for correcting for ambient VOC absorption while at the same time speculating about the nature of absorbents on the front filter.

4) Receptor modeling assumes conservation of composition. Since source sampling is done under different, probably not ideal conditions, relative to ambient sampling, how do we relate these ambient results to [fresh] source emissions?

5) What are the relative importance of volatility and reactivity for these compound classes?

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 20329, 2010.