**Atmospheric
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Comment

Interactive comment on "Particulate polycyclic aromatic hydrocarbon spatial variability and aging in Mexico City" *by* D. A. Thornhill et al.

Anonymous Referee #2

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This paper presents atmospheric levels of PAHs and other gaseous species measured during a 2006 sampling campaign in Mexico City. Six locations around the city were selected to monitor spatial variability and aging of these compounds in the metropolitan area. Researchers used different techniques to evaluate relations between concentrations of PAHs, particle surface area, black carbon, and NOx.

The paper, although clearly written, raises some important questions in it discussion section. Several of their "receptor sites" cannot be considered "receptor sites" at all times because wind patterns in the metropolitan area are very consistent, with well defined predominant direction, and vary with time of the day. The effect of atmospheric transport is mentioned, but no allusion is made to considering wind direction and speed in their calculations, which may lead to erroneous

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interpretations.

The authors of this paper suggested that particle coating with secondary aerosols may affect the reading of the PAS, which may be correct, but measurements done with the MS should not be affected by this process, and other phenomena should be presented to explain this decrease during photochemical periods. A better analysis of PAH and SOA interference may be achieved if data is analyzed in the early morning hours when photochemical activity is low, and primary sources are high.

Finally, authors pointed that the correlation of PAHs with NOx, is likely due to diesel engines as sources of PAHs. Diesel engines are also high emitters of BC, which has been measured by aethalometer, and thus correlation between PAHs and BC should be high in source sites, and receptor sites with high impact of local sources.

In summary, I recommend the authors to include a more detailed analysis of the role of meteorological conditions, including wind direction and speed, inversion layer height, and stagnation, transport and photochemistry, in their data analysis. Doing so, I expect higher correlations between the different pollutants, over the different periods of the day when the trend of pollutants and meteorological conditions are similar.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 15693, 2007.

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