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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Eddy covariance flux measurements of pollutant gases in urban Mexico City" *by* E. Velasco et al.

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The authors thank the comments and observations made by S. Madronich, guest editor, in lieu of referee two. The revised manuscript addresses his comments, and seeks to explain better the differences between ambient concentrations and fluxes. The manuscript states that ambient concentrations depend on emissions, deposition, chemical and meteorological processes, in contrast to fluxes which depend strictly on deposition and emissions. In a place like the monitored residential district in Mexico City, the vegetation cover is reduced and therefore the fluxes depend predominantly on anthropogenic activities.

The major concern of the editor appears to be the methanol observations. The 2006 emissions inventory reports methanol emissions from point sources, and commercial

and residential use of auto-care products, inks, adhesives, pesticides and other domestic products, but not from traffic exhaust. However, recent studies have reported vehicle exhaust as a significant urban contributor (e.g. Legreid et al., 2007) to methanol levels. In rural and suburban areas, biomass burning is also an important contributor (Holzinger et al., 2005), however methanol emissions from biomass burning in the monitored site are not expected because of the neighborhood characteristics: completely urbanized with medium class residences. The methanol correlations with CO2 flux and vehicular activity presented in the manuscript suggest that the difference between observed fluxes and reported emissions are due to the lack of mobile emissions in the emissions inventory.

As indicated in the revised manuscript the methanol emissions from the 63 surrounding cells include point sources, whose emissions reduce the difference between the observed fluxes and estimated emissions in the emissions inventory up to 25%. The possible omission of point sources in the other two smaller footprints might help to explain the observed lack of methanol emissions, in addition to the lack of emissions from mobile sources.

A complete analysis of the nature of the point sources is not possible. By law the local authorities cannot provide specific information for individual point sources.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 7991, 2009.