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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Anthropogenic and biogenic influence on VOC fluxes at an urban background site in Helsinki, Finland" *by* P. Rantala et al.

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Looking at the map provided in the figure 2, the site seems to be particularly influenced by green vegetation. Even the sector identified as buildings is comprised of a fairly large fraction of vegetation, rather unique compared to the urban UK sites the authors compare their measurements with. Consistently this sector does not show a significantly different pattern of m/z 69 emissions. Perhaps a better description of this sector would be to call it ' urban residential sector with vegetation'.

BTEX emissions: The sector identified as road boarders to what it seems like an industrial complex (for example: at a distance of about 300-400 m a smoke stack is evident on google earth). It is argued that this sector is primarily influenced by road traffic. The

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influence of additional BTEX sources in this sector (other than traffic) could perhaps be obtained by explicitly comparing toluene to benzene fluxes during rush hour peaks with other periods. The upper limit of traffic related emission ratios should be close to 2 (1.9) based on the emission factor database for the average European fleet. The authors compare their measurements to other cities. In this context it is noted that Mexico City seems to be a special place with respect to many of the measured VOC fluxes. For example toluene measurements by Velasco et al., 2009, were thought to be influenced by local application of resin surrounding the flux tower resulting in toluene / benzene flux ratios of about 8-10. Measurements by Karl et al., 2009, reported a city wide average ratio of about 3.2 for Mexico City and concluded that about 60-70% of toluene could be due to evaporative emissions. Figure 11: It is noted that a correlation of fluxes between some compounds (such as toluene) and CO2 needs to be discussed with caution. For example most of traffic related toluene emissions are evaporative and not produced by the ICE - thus not intrinsically linked to CO2 tailpipe emissions. This is fundamentally different for benzene emissions for example, which are much more closely related to tail-pipe emissions.

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