

Interactive comment on “CityFlux perfluorocarbon tracer experiments” by F. K. Petersson et al.

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The paper describes results from two experiments releasing perfluorocarbon tracers in streets in Manchester, complementing work undertaken in the DAPPLE project round the Marylebone Road area in London to study dispersion of pollutants or toxic substances through and above the urban canopy. The results are compared with a simple model assuming the release divides and flows along different streets between the buildings, and also to test another model for the maximum concentration over longer distances as material is transported upwards from the streets to disperse vertically and horizontally above roof level. Such results are essential to improve understanding of dispersion through and above the urban canopy in relation to air quality, and it is shown that a standard Gaussian plume model does not give correct results in these circumstances.

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The paper does not go into the thinking behind the simple modelling, and there is no discussion of the differences observed between the two experiments. For example in the second experiment with lighter winds the effect of vehicles in dragging pollutants along and between streets may be more important relative to the effect of winds in moving the material through the canopy. The experiments were undertaken at mid-day, and the paper mentions convective effects. However there is no discussion of the general circulation patterns within street canyons, and how this might be affected by strong sunshine. There is also relatively little information on the topography of the streets except to indicate that the buildings are generally taller round the second release.

I also have a query about the second experiment. The measurements were taken over 3 consecutive periods of 8 minutes. It is not clear to me why the measurements in the third period are so very much higher than in the second? Do the authors have an explanation for this as it would seem there is time for the material to spread quite a bit within 16 minutes?

Altogether a bit more detail on the city area in which the releases took place could be useful, in addition to the maps which are clear and a good way of presenting the measured concentrations.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 27, 2010.

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