

Interactive comment on “Fossil and non-fossil sources of organic carbon (OC) and elemental carbon (EC) in Göteborg, Sweden” by S. Szidat et al.

Anonymous Referee #2

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General comments: The manuscript presents an interesting study on sources to organic (OC) and elemental carbon (EC) in particles. Radiocarbon analysis distinguishes between fossil and non-fossil sources to of EC and sub-fractions of OC, which is an important topic for both scientific and regulatory purposes. The technique has previously been applied in other studies and the most interesting part of the present study is interpretation of the results from another type of study area. The problem in this type of study is often the high costs and difficulties of sampling and performing the radiocarbon analyses, which limits the number of samples. A remarkable result of the present study is detection of biogenic SOA in wintertime in Sweden. The strength of the study would have been improved if the results were supported by additional measurements

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such as NO_x and CO. Generally the manuscript is well written and presents the results in a straightforward way.

Specific comments: Abstract: I would prefer to have some absolute values in the abstract e.g. concentrations of OC and EC in order to describe the study area for the reader and relate the presentation of relative values to absolute values.

Introduction: In the introductory discussion of PM the following sentence needs clarification: The carbonaceous fraction, which is a main constituent of PM, contributes to these effects due to their particulate character. P16257 Line 5: the lighter fraction - you probably mean low molecular weight?

Results: The calculation of the combined measurement uncertainty should be described and discussed in more details in the text.

Figures 1, 2, 3 and 5. The figures are too small. It is difficult to see back trajectories on figs 1 and 2. The different fractions should be clearer in fig. 3 (suggestion: one in black, one in white).

Discussion: Page 16271: The high fM(EC) in the second sample 20-27 June could be caused by the midsummer tradition in Denmark, where every town has a bonfire on June 23. Apparently these fires are too small to be visible on MODIS fire maps.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 16255, 2008.

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