**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Application of positive matrix factorization in estimating aerosol secondary organic carbon in Hong Kong and insights into the formation mechanisms" *by* Z. B. Yuan et al.

Anonymous Referee #2

Received and published: 20 September 2005

1 General Comments

The paper by Yuan et al. presents an extensive amount of PM10 measurements and analyses in Hong Kong - an area which is concerning climate relevant topics very important. Yuan et al. use a new interesting method, the positive matrix factorization to estimate the SOC contribution in aerosol mass. Although most of the VOCs reaction products involved in the condensation growth of particles are unknown the paper gives some interesting features especially in the quantity and seasonal behavior of SOC in

EGU

this area. The paper is written in a good structured way and well inside the scope of ACD. For this I recommend to publish the paper with some additional aspects which are listed below.

2 Specific Comments

The PMF method and the source identification procedure which are only mentioned by the authors very shortly in chapter 3.2 should be described in a more approved way. For the reader it is not satisfying that these methods, where all the data analyses are based on can be found at some web-pages which are difficult to reach concerning the experience of referee #1. In the last paragraph of chapter 4.1 some explanation of the PMF method are made, however this should be replaced into chapter 3.2.

In chapter 4.2 the authors discuss the seasonal pattern of SOC in Hong Kong in comparison with other areas. The surprising result that SOC concentration is much higher in winter compared to summer in the Hong Kong area is explained by meteorological conditions without any further analyses. I recommend that the authors should at least at this point include some analyses of free available meteorological data (trajectories, humidity, rain fall, temperature, Ě) for some specific days. In my opinion such results are worth and scientific very interesting to explore and will give the whole scientific community further discussion reasons. During the summer month the washout could be one responsible process in the tropics for lower SOC concentrations beside the lower concentrations of NMHC mentioned by the authors. However, it is too speculative without any further analyses.

At the end I also agree with referee #1 that the selected title is somehow misleading. Application of positive matrix factorization in estimating aerosol organic carbon in Hong Kong is completely correct. However the phrase - insights into the formation mechanisms - is with the presented analyses overvalued. I would highly recommend the authors to change the title or include more data analyses in this direction which would contribute new scientific results into the formation mechanisms.

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 5299, 2005.

Interactive
Comment

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper

EGU