Atmos. Chem. Phys. Discuss., 8, S4624–S4627, 2008
www.atmos-chem-phys-discuss.net/8/S4624/2008/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Polar organic tracers in $PM_{2.5}$ aerosols from forests in eastern China" *by* W. Wang et al.

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Received and published: 10 July 2008

The paper presents valuable information on PM2.5 aerosols composition and deserves to be published. It has a clear title and concise abstract but some data should have an improved analysis as there are some unexploited results. Additionally, there are results supported in only a few samples and therefore some conclusions have to be more reasoned. The language is sometimes dense, mainly on sites description. I advise to eliminate any unnecessary information to simplify the manuscript.

There are some corrections and improvements to be made, namely within two major areas: 1)paper organization and 2)analysis of presented results

1 - PAPER ORGANIZATION

- Page 12438, line 22 - Site descriptions. The sites description is somewhat confuse and extensive, being not completely clear what are the main differences between sites (besides latitude). Please include only the relevant information to help interpretation of results. I suggest including each site description in a separate paragraph, or preferably, the construction of a table with all the relevant information (coordinates, altitude, surrounding forest type, surrounding cities ...) that clearly shows the main characteristics and differences between sites and help the reader through the text.

- Page 12441, section Results and Discussion. Throughout all this section Table 1 is referred as presenting the results of all studied sites. However, this table only contains Changbai site data! Tables 2 to 4 (not referred in the text) present other sites results. This entire section needs a major revision on this point. As one of the main objectives of this paper is to compare data from these four sites, it would be easier to the reader to get this information in one single table, instead of four different ones. Therefore, I advise to present these data in one single table.

2 - ANALYSIS OF PRESENTED RESULTS THAT NEEDS TO BE FULLY (OR BETTER) EXPLOITED

- Tables 1 to 4 - The number of samples is not always consistent with the sampling period presented. For instance, the sampling period in Chongming was from 12 to 19 June 2006 (8 consecutive days). However, night-time data only presents one single measurement. Was it due to unfavourable meteorological conditions? Please include a statement justifying these discrepancies. Additionally, Table 2 presents data based on one measurement. That is clearly insufficient to achieve any valid conclusions. There are no standard deviations or concentration range presented that showed that these data are consistent. Please include a statement showing the limitations of these results.

- Page 12440, line 6 - "All sampling periods were selected taking into account the meteorological conditions and the maximum solar radiation". Besides solar radiation, what

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were the meteorological limiting conditions that conducted to these sampling periods? Was it only rain or something else? Please specify.

- Page 12442, line 3 - "Significant amounts of the 2-methyltetrols... were observed in boreal-temperate Changbai, subtropical Dinghu and tropical Hainan". No comments were made on the relatively low concentration of 2-methyltetrols in Chongming. Is there any reason for the almost absence of 2-methyltetrols in Chongming? The possible reasons for this event should be investigated and a comment has to be included in the text.

- Page 12442, lines 11 to 14 - The diel variations of 2-methyltetrols are investigated, conducting to an important insight on the production of SOA from biogenic precursors. It is stated that a diel variation was found. However it seems there is not an absolute evidence for this statement as there are no day/night data for Dingdu but only 24h results (therefore this conclusion cannot be applied to this site). In addition, Chongming exhibits 2-methyltetrols concentrations almost identical for day-time and night-time (average concentrations of 6.0 vs. 5.8 ng/m3) and Hainan day-time maximum SUM (2-methyltetrol concentration), 86 ng/m3 was lower then the corresponding night-time maxima (92 ng/m3). Please reformulate this sentence and comment these observations.

- Page 12442, line 28 - "Yan et al., 2005" is between brackets and should not be.

- Page 12443, lines 9 to 24: The diel variations of C5-alkene triols are not explored in the text. Such comments would be of interest, since they roughly follow the diel variation of the 2-methyltetrols. Please include a comment on their diel variations.

- Page 12444, line 2 - It is stated that similar results for the correlation between 2-methyltetrols and SO2, ozone and NO2, NOx in Chongming as in Changbai. It would be interesting to have the correlation value stated, or the points plotted.

- Page 12446, lines 1 to 2 - The authors found large inter-sites differences in the sugars

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concentrations. Those results deserve further development (e.g., the sum of polyols and the sum of primary sugars follow the same spatial trends). Also, there are diel variations for arabitol, mannitol, glucose and fructose that should be commented. How do these sugars relate to each other? Please study their correlations.

- Page 12446, line 16: "...all biogenic tracer compounds contribute significantly to the OC in both Hainan and Changbai". Please correct to "all studied biogenic tracer..."

- Page 12446, line 6 "Time trends and species attribution to OC" One type of analysis to be made to these OC and EC data is their relative ratio. Changbai and Hainan have similar OC/EC ratios (˜ 12). A very different ratio can be found for Chongming and Dingdu (˜6-7). This different behaviour should be commented.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 12435, 2008.