

## ***Interactive comment on* “Size distribution of EC and OC in the aerosol of Alpine valleys during summer and winter” by J.-L. Jaffrezo et al.**

**J.-L. Jaffrezo et al.**

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Author's answers to reviewer #1.

The authors would like to thank the reviewer for his/her constructive comments on this ms. The modifications in the ms are marked in red.

Specific comments:

1 - The abstract was modified to give more precisions on the comparison. However, it should be acknowledge that, generally, not all of the information can be given in abstracts and that the readers have to read the papers in full if they want to obtain details.

2 - The comparison of TC concentrations obtained with the two methods is now pre-

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sented and discussed in the text (page 3780, lines 24 and following). The discussion on EC was not extended, as suggested by the reviewer. We feel that we do not have enough information to go further in the interpretation of our data. Specifically, it seems that the direction proposed by the reviewer is not correct, as the charrable OC may results from volatile OC species (ie suffering from sampling artefacts), as discussed in Chow et al., 2004.

3 - The determination of Mass Median Aerodynamic Diameters is only interesting if it is performed after a procedure of inversion of the size distribution (with codes as MICRON, for example), that tentatively separates the different modes (Aitken, accumulation, droplet, coarse, etc). The MMAD of the overall size distribution is meaningless in terms of processes and information. However, the inversion procedure is based on many assumptions, and these are often subjected to criticisms. We felt that it was more interesting and straightforward as well as less debatable to base the discussion on the raw data, not performing inversions and not doing an over interpretation of the data.

4 - The example in figure 11 is provided to show how a slightly different OC size distribution (ie, with a shoulder on the right side of the accumulation mode extending over 1  $\mu\text{m}$ , cf case OC7 in figure 6) can be related to that of some other chemical species (ie nitrate, sulphate, oxalate). We feel that more ordinary cases are already proposed with figures 6 and 7 for the cases of OC, and with figure 14 for the connection between OC and sulphate. A mention is added in the text (page 3787, line 4), to indicate that figure 14 can be considered as a “classical case” with this respect.

Minor issues:

1- The paper by Chow et al. (2004) is now quoted at the proper locations, and referenced in the reference list.

2 - The cut off diameters ( $D_{50\%}$ ) of the 13 stages are 0.030 ; 0.060 ; 0.108 ; 0.17 ; 0.26 ; 0.40 ; 0.65 ; 1.0 ; 1.6 ; 2.5 ; 4.4 ; 6.8 ; 10.0  $\mu\text{m}$ , respectively. This is mentioned in the paper in page 3778, line 14.

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3 - The missing references were added in the list.

4 to 7 : These points were corrected.

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Interactive comment on Atmos. Chem. Phys. Discuss., 5, 3773, 2005.

**ACPD**

5, S2240–S2242, 2005

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