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Interactive comment on "Relative humidity impact on aerosol parameters in a Paris suburban area" *by* H. Randriamiarisoa et al.

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1) p. 8095, line 24: It is stated that the CPC detects all particles with a radius between 0.05 to 1.5 um. What is meant, then, by a 100% collection efficiency for 0.01 um?

The value of 0.05 has been replaced by the true value of 0.005 μm

2) p. 8096, line 12: Define occupation rates.

This term has been defined in the text.

3) p. 8096, line 23: What is the uncertainty in the OC to POM factor of 1.3?

The uncertainty could be important because a function of the organic compounds. We have included a small discussion and references to the works of Hegg et al. (1997),

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Turpin et al. (2000) and, Turpin and Lim (2001).

4) p. 8097, equation 2: This calculation of TPM assumes no water is associated with the aerosol at 30% RH. This assumption should be stated explicitly and the uncertainty of the resulting residual concentration should be reported.

We have added the sentence and referred to the next sections where calculations have been done.

5) p. 8097: As a test of internal consistency in the data set, can dust concentrations be estimated from the XRF measurements on the impactor samples and then compared to the residual concentrations calculated from equation 2?

Yes, it is possible for the specific case of Paris where one impactor sample has been performed. Nevertheless, such a result will be very questionable because the number of sample is weak. Moreover, the filters of the impactor were not weighed.

6) p. 8099: The initial discussion of Figure 2 would be clearer if the salt mixtures (Type 1, 2, and 3) were introduced here rather than in Sect. 4.2.2.

It is also a possibility and a logic as acceptable as the one used here.

7) p. 8099, line 10-11: Not more important but, rather, a factor of 4 to 10 times larger.

The correction has been made.

8) p. 8101: Define MDRH when first used.

The correction has been made.

9) p. 8101, line 20: In Figure 2, P4 and P5 indicate that the type of inorganic salt changes over the course of the increase in RH. Given that the composition of the aerosol is changing, is it valid to describe the observed behavior as the phase change due to aerosol of mixed composition such that the first increase in particle size is due to a phase change from a solid crystal to a heterogeneous droplet containing a solid core

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and the second increase is due to dissolution of the solid core? Is it not, instead, due to a change in chemical composition? This is mentioned on line 7 of p. 8102 but this caveat (of a change in chemical composition controlling the RH response of scattering) should be mentioned at the beginning of the discussion.

Yes, we have moved the sentence to be clearer about the changing of chemical composition.

10) p. 8102, line 16: State in the text that the temporal variability is actually the standard deviation.

This point has been clarified.

11) p. 8103, line 5: It is stated that “For the periods P1 and P3, reff2 shows a weaker variability with RHEˇ .” It is difficult to see a positive correlation between reff2 and RH for P3. In fact, they almost look anticorrelated.

Yes, it is difficult and we have changed “weaker” by “not significant” that is more appropriate.

12) p. 8104 and Figure 5: Based on the IC and XRF analysis, it is concluded that the mode close to rM2 = 0.22 um contains mainly soluble components while the mode close to rM2 = 3.5 um contains principally insoluble components. What about the organic component? Can it be ruled out that it does not a have significant contribution to the mass in either size range? (The POM content of the small mode is discussed in Section 4.1. but should also be mentioned here).

Yes a part of the POM component may be hydroscopic and may affect the accumulation mode. We have clarified this important aspect. The concentrations of OC retrieved from the impactor measurements have been done.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 8091, 2005.