

***Interactive comment on “Seasonal and diurnal variations of particulate nitrate and organic matter in the Central European atmospheric aerosol” by L. Poulain et al.***

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We would like to shortly and immediately answer to the comments of the reviewer #1 (RC-C3093 10 May 2011).

Regarding the quality of the figures, we did not find any problem to expand their sizes more than a full computer screen size without any loss of quality using either the on-line version or the downloaded pdf file. So, it should be technically possible to check the Figures. The Figures of the final version of the manuscript can be improved.

We also want to clarify the point concerning the terminology “deliquescence constant” employed in the discussion of the seasonal changes in particulate nitrate concentra-

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tions. The letters “k” did not refer to rate constants but to equilibrium constants of reactions R1 and R2 and by consequence, they should be written “K” rather than “k”. As written in the manuscript (page 11625 line 26ff), the equilibrium between the gaseous phase concentrations of HNO<sub>3</sub> and NH<sub>3</sub> and the particulate phase concentration of ammonium nitrate is directly depending on the temperature and relative humidity (RH). For this reason, the relation between RH and the deliquescence relative humidity (DRH) of ammonium nitrate was calculated (eq. 2) and investigated for each data point. Two different periods were considered depending on the value of RH compared to the estimated value of DRH: (i) a period of dissociation when  $RH < DRH$ , corresponding to reaction R1 and (ii) a period of deliquescence when  $RH > DRH$  corresponding to reaction R2. According to the corrected notation, a sentence on page 11626 line 4 must be corrected to “For the period of dissociation ( $RH < DRH$ ), only the equilibrium constant of reaction R1 ( $K_p$ ) was considered and calculated according to eq. 3 (Seinfeld and Pandis, 1998)” and page 11626 line 7 to “For the period of deliquescence ( $RH > DRH$ ), only the equilibrium constant of reaction R2 ( $K_{deliq}$ ) was considered and calculated according to eq. 4 (Seinfeld and Pandis, 1998)”.

The present modifications will be included in the final version of the manuscript and a more detailed point to point answer of the other reviewer comments will be done later.

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