

## ***Interactive comment on “Absorption coefficient of urban aerosol in Nanjing, west Yangtze River Delta of China” by B. L. Zhuang et al.***

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Response to reviewer's comment C7541:

General Comments: The paper presents 2-year measurements of aerosol absorption optical coefficients at an urban site in Nanjing of China. The paper provides some points to temporal variations of aerosol absorption optical properties and their possible reasons, and influence of biomass burning and pollutions. In fact, high aerosol burden regions such as areas in developing countries are still not well characterized in terms of microphysical and optical changes. The paper also analyzed the influence of meteorological factors on aerosol optical properties. The topic of this paper is of common interest within the scientific community. Although the manuscript includes some

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important data, however, the quality is not sufficient in the current state to be directly published. The authors should take the suggestions made here into consideration for minor revision.

Dear Reviewer, Thank you very much for reviewing the manuscript and providing us the constructive comments and suggestions on our study. With respect to your comments, necessary revisions of the paper have been made. We will response to your comments carefully point by point; details of the revisions can be referred to the revised version of the manuscript.

Specific suggestions: 1. In section 2, the authors should add some information of the methods for calculating and correcting aerosol absorptive coefficient, such as WC2003 and SC2006, especially estimating their errors.

R: Thank you very much for your suggestion. Information of the methods for calculating aerosol absorption coefficient has been added to the first paragraph (line 20 in Page 5 in discussion typeset manuscript) of Section 2. Information of the methods for correcting aerosol absorption coefficient has been added to the last paragraph (line 17 in Page 9 in discussion typeset manuscript) of Section 2. Details can be referred to the correction version of the discussion typeset manuscript or revised version of the manuscript.

2. In section 3, the paper gives more analyses of aerosol absorptive coefficient variation and its reasons, however, what is the aim or usefulness of three different methods to calculate and compare coefficients?

R: Thank you for your question. There are several correction methods for the absorption coefficient measured by Aethalometer. The recommended ones used in this study is to figure out the differences in calculating optical properties of absorbing aerosols among different corrections and to understanding the uncertainties in estimating absorption coefficient measured by Aethalometer. Results in this study indeed show that absorption angstrom exponent from WC2003 is much smaller than the one from

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SC2006 and also smaller than the one from CE-318 as discussed in first paragraph in Section 3.4. The results also show the uncertainties of the absorption coefficient corrected by different methods as listed in Table 1 and discussed in the second paragraph in Section 3.4.

3. More comparison between previous results and this study is needed.

R: Thank you for your suggestion. Comparisons between the relevant works (up to now) and this study has been carried out in Section 3.4 (Line 17-25 in Page 15 and Line 1-3 in Page 16 in discussion typeset manuscript).

4. English needs more revision.

R: Thank you for your suggestion. English correction has been addressed throughout the whole text by Professor J. Liu from University of Toronto, Canada, who is also the co-author of the manuscript.

Please also note the supplement to this comment:

<http://www.atmos-chem-phys-discuss.net/15/C8918/2015/acpd-15-C8918-2015-supplement.zip>

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