Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2019-654-RC1, 2019
© Author(s) 2019. This work is distributed under
the Creative Commons Attribution 4.0 License.

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Amplification of black carbon light absorption induced by atmospheric aging: temporal variation at seasonal and diel scales in urban Guangzhou" *by* Jia Yin Sun et al.

Anonymous Referee #1

Received and published: 2 December 2019

This paper reports a field measurement about the amplification of light absorbing property of black carbon aerosol by coating using a statistical method. The results of the light property measurement from this study is interesting and quite comprehensive, which provides some valuable insights on light absorbing amplification of black carbon aerosols in highly polluted urban region in China.

Major comments: 1. The authors need to clearly state what is new in this paper and highlight which are the major new findings. I feel that the current writing style makes this paper look more like a data report of some measurement in a different location.

2. It seems that one novelty of this paper is applying a newly developed MRS method

to estimate the light absorption enhancement. If this is the key novelty, then I would recommend to add a separate section to discuss the difference between the current results from this method and those from other methods.

3. The introduction part is like a mini review rather than an introduction. It provides too many details, some of which are not quite relevant to this study. In addition, this introduction appears not to reflect the significance of raised issue/science questions.

4. When analyzing diurnal patterns of BC particles, I would always recommend to separate weekdays and weekends.

5. This paper is quite long and not well written. I think the authors should make it more concise and improve its writing.

Specific comments:

Eq3: the denominator "EC" needs to be defined first. L104: "to low" should be "too low" L108: Consider revising the sentence "Third, the TD is not the ideal time machine for reversing the morphology transformation of BC." L169: what are these "MAE values"? L269: The sentence "The MAE at the minimum R2 of the EC vs. ..." is confusing and needs to rewrite. L620: The sentence "As a result, the increasing nitrate might potentially affect BC's radiative forcing in China." should be rewritten.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2019-654, 2019.