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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The optical, physical properties and direct radiative forcing of urban columnar aerosols in Yangtze River Delta, China" *by* Bingliang Zhuang et al.

Anonymous Referee #2

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General comments

This measurement-based study analyzes the column-integrated optical and physical properties and direct radiative effects (DRE) of aerosols in Nanjing. The authors present the mode (coarse and fine) and composition (scattering and absorbing)-dependent aerosol optical properties, with some properties directly measured and some inversely derived. They also present and discuss the seasonal variation of the aerosol optical and physical properties and direct radiative effects.

The major concern is the novelty of the study. It appears that considerable studies have been conducted on the column-integrated aerosol properties and DRE in this

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Discussion paper

region, especially the authors have published several papers in this topic and in this region. What presents in the manuscript is more like a synthesis of what the authors and others have done with an extension of the time coverage, and it is hard to find anything new.

In addition, the manuscript is quite dully lengthy, and for the way it is presented, I feels that the results/findings are somewhat isolated and trivial, and I find it difficult to grasp useful information in the context of its contribution to the current understanding of the aerosol radiative effects and model applications to reduce the uncertainty in estimating the aerosol DRE.

Finally, many aerosol properties are retrieved through an inverse algorithm in which measurement errors and assumptions are critical. The authors do not specify what are the errors and assumptions, and fail to discuss how they would affect the uncertainties in the derived variables.

Due to these issues, the current form of the manuscript is not suitable for publication.

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