Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2019-250-RC1, 2019

Atmospheric Chemistry and Physics Discussions

Interactive comment on "A new parameterization scheme of the real part of the ambient aerosols refractive index" *by* Gang Zhao et al.

Anonymous Referee #1

Received and published: 24 April 2019

General comments: Uncertainty of aerosol optical properties causes further uncertainties in climate prediction in model simulations, in which the real part of the refractive index is important. Thus, determining the aerosol real part of refractive index (RRI) is an important issue. The manuscript entitled "A new parameterization scheme of the real part of the ambient aerosols refractive index" studied the RRI by field measurement in East China. The title is "A new parameterization scheme of the real part of ...", however, as I understood, the parameter scheme is just established by the measurements of the system reported by Zhao et al., (2018b). Moreover, the universality of this parameterization scheme at other location is unknown. Also, the figures and descriptions need be reorganized carefully. Therefore, although this paper focused on the interesting question, it needs further analysis, reorganization, discussion and

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Discussion paper

clarification to improve the confidence of the results.

Specific comments: 1. Line 26, “reginal” should be “regional”. 2. The logics and description of Section “Introduction” are insufficient. 3. I suggest the authors combine some figures, for example, Figure 1, of the supplement into the main of manuscript. 4. Line 153-155, the description of variables in equation (5) is confused. 5. Line 152 and Line 234, all of two equations are denoted as (5). 6. Why not use the vertical profiles of temperature, pressure and water vapor at the times corresponding to the aerosol measurements? 7. Line 234, What’s the meaning of in Equation (5)? 8. Can this method be used at other location and other time? 9. Why do the authors compare a result with other at different time series and measurement site? So, a reliable result should be induced here to evaluate this study. 10. In Section 3.1, what’s the relation among the wind speed, T and RH with the σscaÂăand mBC? Which should be reflected in descriptions. Otherwise, the results of meteorology measurements are meaningless.

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