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Interactive comment on "Light absorption of brown carbon in eastern China based on 3-year multi-wavelength aerosol optical property observations at the SORPES station and an improved Absorption Ångstrom exponent segregation method" *by* Jiaping Wang et al.

Anonymous Referee #1

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Wang and coauthors describe the analysis of a three year dataset of multiwavelength aethalometer data in Eastern China using a slightly modified Angstrom exponent approach, coupled with a Mie theory model, to investigate brown carbon optical properties.

Major comments The manuscript is poorly written overall, the original Absorption Angstrom Exponent model development is not discussed or cited, the discussion is

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Discussion paper

difficult to follow throughout and the findings do not offer much insight into either the sources or physical properties of brown carbon in the region. The major drawback here is the absence of direct measurements of BC particle morphology and coating thickness/composition. Inferring these properties using OCEC data is not appropriate for the Mie theory calculations that follow. Measured particle number-size distribution and coating thickness/composition data would be well suited to investigate the brown carbon properties discussed here. SP2, PAS and SP-AMS instruments, for example would provide more suitable input data. The mixing state of black and brown carbon has been demonstrated to be complex and site-specific, and thus detailed mixing state information is critical as an input for representative Mie theory calculations. If the emphasis is on the aethalometer data processing approach this could indeed be repackaged, however a different journal would likely be a better fit.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-49, 2018.