

## ***Interactive comment on “Intra-regional transport of black carbon between the south edge of North China Plain and Central China during winter haze episodes” by Huang Zheng et al.***

**Anonymous Referee #2**

Received and published: 6 January 2019

This study investigates the intra-regional transportation of black carbon (BC) between North China plain (NCP) and central China (CC) based on the simultaneously measurements at five cities located in the two regions during winter haze period. The authors have identified two important BC emission sources (i.e., biomass burning and fossil fuel) and their geographic origins during transportation. Since there are still limited studies on the intra-region transportation in China, this study takes insight in this topic. The manuscript is well written and organized. But there are still some minor issues, which need to be addressed before publication. Please see specific comments below.

1. Lines 240-246: Taking the fossil fuel BC (BCff) as the control priority in WH and other cities in this study is not just because the BCff increases from clean to

C1

pollution period but also due to the much higher absolute conc. of BCff than biomass burning BC (BCbb) under all the three conditions (Fig. 4b and c). Regarding Beijing case, in addition to the percentage of BBbb increasing from clean to pollution episodes, are the absolute conc. of BCbb also higher than BCff? If not, it should be careful to state that the priority in North China is to control BCbb. 2. The aging process could significantly change the optical properties of BC aerosols (Peng J, et al., PNAS, 2016; Wang et al., J. Adv. Model Earth Syst, 2018). Are there any observed changes in BC absorption due to the aging during the intra-regional transportation?

Figures: Fig.1: For air mass clustering panels, you may want to use different colors to differentiate the air masses from different directions. Fig. 3: Does the count (y axis) denote the number of data points? If so, why there is much less data points at WH? The smaller total count might be because missing or not available data in measurements at WH? Typos Line 227: Figure 3 is Figure 3b.

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-992>, 2018.

C2