This manuscript uses a good dataset to examine the use of 7-wavelength aethalometer data for the attribution of ambient aerosol light absorption to fossil fuel (FF) combustion and wood burning sources. This manuscript is appropriate for AMT and should be published after taking the following comments into account.

1. The title refers to "traffic aerosols" while the manuscript discusses aerosols from fossil fuel combustion. Therefore in the title "traffic aerosols" should be replace with "fossil fuel combustion aerosols".
2. Filter-based measurements of aerosol light absorption such as implemented in the aethalometer have several systematic errors. Here, the authors just refer to the correction algorithms used. However, some of these errors cannot be corrected and their influence must be discussed. Most prominently is the morphology change of liquid particles when sampled on filter media. For an example for WB aerosols sampled on quartz fiber filters, please see (Subramanian et al. 2007).
3. The "absorption Angstrom coefficient" is discussed in many places in the manuscript but referred to with several different, sometimes misleading terms. Examples include "Angstrom exponent" (line 67), "absorption exponent" (line 146), "absorption coefficient" (lines 214, 215). The authors need to use a uniform term; I suggest "Absorption Angstrom Coefficient (AAC)".
4. Lines 42, 43: "BC is the light absorbing part of carbonaceous material...". Incorrect! BC is the light absorbing part of carbonaceous material, which has a wavelength independent imaginary part of the refractive index. The roles of BC and light-absorbing OC are correctly discussed in lines 68-75.
5. "The aethalometer model". Here, the authors use only absorption coefficients measured at two wavelengths (i.e., 470 nm and 880 nm (or 950 nm)) to separate absorption due to FF and WB. Using only two of the seven aethalometer wavelengths necessitates using absorption Angstrom coefficients (AACs) from the literature. The use of an AAC value near or equal one for FF aerosol is fine, but the AACs for WB are far less well established and probably dependent on the source and combustion phase. Here it is very important to use absorption coefficients at all seven wavelengths to determine the AACs for FF and WB for the individual receptor sites. At the very least, seven wavelength spectra for FF and WB dominated episodes must be shown and fitted with a power law. This would also demonstrate to what degree the power law dependence of aerosol light absorption, inherent in the AAC concept, holds for the existing aethalometer measurements over all wavelengths.
6. line 162: Define sigma_abs.
7. line 171: "…the absorption exponent alpha was calculated over all seven wavelength…". Please tell the readers how this was done, for example by a linear regression of absorption coefficient as function of wavelengths in log-log space. For more information, please see (Moosmuller et al., 2010)

REFERENCES:

Moosmuller, H., R. K. Chakrabarty, K. M. Ehlers, and W. P. Arnott (2010). Absorption Ångström Coefficient, Brown Carbon, and Aerosols: Basic Concepts, Bulk Matter, and Spherical Particles. *Atm. Chem. Phys. Discuss.*, **10**, 24735-24761.

Subramanian, R., C. A. Roden, P. Boparai, and T. C. Bond (2007). Yellow Beads and Missing Particles: Trouble Ahead for Filter-Based Absorption Measurements. *Aerosol Sci. Tech.*, **41**, 630-637.