

General Comments:

The manuscript by Tommaso Isolabella et al. presented an upgrade to the Multi-Wavelength Absorbance Analyzer optical apportionment model. In addition to the apportionment of the absorption coefficient b_{abs} in its components and sources, the extended model allows the retrieval of the Absorption Ångström Exponent of each component and source, thereby avoiding initial assumptions regarding these parameters. The deployment and application of this improved model toolkit holds some technical value.

Overall, the topic fits well within the scope of AMT. Before its publication, the following comments need to be addressed.

Specific Comments:

The parameter value for α_{WB} varied from 1.94 (1.64) to 2.06 (1.76) in Fig. 3. Please explain reasons for choosing these ranges here. In addition, is there any specific reason that you used 0.02 as the interval in Fig. 3? The uncertainties caused by choosing different interval values and the ranges of parameter value for α_{WB} should be evaluated. Please elaborate.

The authors assumed that the absorption coefficient is decomposed into contributions from fossil fuel and wood burning, and that BrC is only produced by wood burning (Line 93-95). The authors need to address such uncertainties in the revised manuscript. In addition, such uncertainties should be evaluated at the different campaigns due to different primary emissions.

The authors compared the Propata campaign and Milan campaign datasets to verify whether the particulate sampled in a rural area has a different optical behavior than the aerosol sampled in an urban area. However, the comparisons have not been deeply discussed throughout this manuscript. For example, the differences between BrC and BC_{WB} are similar across all sampling time in Propata, but the differences vary at different periods in Milan. Please elaborate.

In Section 4, a brief description of the Propata campaign and Milan campaign (including PM mass concentrations, composition, and sources) would be good. Otherwise, we don't know the general characterization of the two campaigns.