

Answers to RC1: 'general comments', Anonymous Referee #2

We strongly acknowledge the Referee for the valuable and precious comments and suggestions. In the following, a point-by-point reply to all the comments is given.

The aim of the paper should be better stressed in the abstract. Furthermore from the abstract it is not clear why the authors decided to use a different laser radiation. **It has to be specified.**

Following the Referee's advice we added in the abstract few sentences to better stress the aim of the paper and why we decided to use a different laser wavelength.

The text could be simplified in many points. For example at **line 64**: aerosol samples collected on filters made of refractory material (i.e. quartz fibre filters), should be: ... made of quartz fibre filters (in fact there aren't other possibility).

Done

From line 69 to line 72 the text could be simplified since how TOT method operates is well known.

In our opinion, this very short paragraph could be useful to a reader not familiar with TOT measurements. So we prefer to keep it in the text.

At **line 85** of the introduction it should be mentioned that biomass burning contribution to PM could be also estimated by other methods such as AMS (aerosol mass spectrometry) which starting from mass spectral data is suitable for identification of biomass burning source. At this purpose I suggest to include the following reference:

Daellenbach, K.R., Bozzetti, C., Křepelová, A., Canonaco, F., Wolf, R., Zotter, P., Fermo, P., Crippa, M., Slowik, J.G., Sosedova, Y., Zhang, Y., Huang, R.-J., Poulain, L., Szidat, S., Baltensperger, U., El Haddad, I., Prévôt, A.S.H. Characterization and source apportionment of organic aerosol using offline aerosol mass spectrometry (2016) Atmospheric Measurement Techniques, 9 (1), pp. 23-39.

A short statement and the suggested reference have been added in the text

Somewhere in the introduction, it **should be mentioned that levoglucosan is the marker for BB**. At this purpose together with the reference Piazzalunga 2010, I suggest to include for example the following reference:

Vassura, I., Venturini, E., Marchetti, S., Piazzalunga, A., Bernardi, E., Fermo, P., Passarini, F. Markers and influence of open biomass burning on atmospheric particulate size and composition during a major bonfire event (2014) Atmospheric Environment, 82, pp. 218-225.

A short statement and the suggested reference have been added in the last part of section 3.2