Atmos. Meas. Tech. Discuss., 6, C4142–C4145, 2014
www.atmos-meas-tech-discuss.net/6/C4142/2014/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Clues for a standardised thermal-optical protocol for the assessment of organic and elemental carbon within ambient air particulate matter" *by* L. Chiappini et al.

Anonymous Referee #2

Received and published: 28 January 2014

This paper covers various aspects of using the thermal-optical method for determination of elemental and organic carbon in ambient particulate matter. This method is widely used in air quality networks worldwide and currently considered as the candidate for the future reference method for EC and OC by the European Committee for Standardization. There are still many open questions regarding the temperature protocol and the optical charring correction used for thermal optical analysis of PM samples. This manuscript aims at providing insights into the effect of different temperature protocols and optical correction methods on the measurement result. Although the results and conclusions presented in this paper are not totally new, the paper gives a good

overview of the current problems associated with this analytical method. I therefore suggest to accept this paper for publication after some minor revisions. The manuscript should carefully be checked for linguistic errors.

Minor comments:

Abstract, line 19: "rural and urban results" does not exist, should be rephrased. Same expressions ap-pear at page 10245 at lines 4/5.

Page 10235, 1st line: Typo, should be Huntzicker et al. 1982.

Page 10238, lines 20-22: This sentence reads ambiguous: The repeatability for TC of 1% achieved by two laboratories is considered as satisfactory, the repeatability of the other labs is 5-7% and denoted as very satisfactory. Please clarify this.

Page 10240, lines 9/10: it says here ".. the intralaboratory repeatability % (corresponding to the mean of each laboratory repeatability)," The relative intralaboratory repeatability (in %) is here not appropriately defined, the explanation given in parenthesis does not give a percentage. Please correct this.

Page 10240, lines 25/26: Should better note something like "as a deviation of the front oven temperature from the set temperature may lead to a shift of EC/TC."

Page 10241, line 1: Use "provide" instead of "propose".

Page 10241, line 1: What does lack of fit mean here? I guess this is not the correct expression here, please correct.

Page 10242, lines 2/3: Where do the numbers for the uncertainties come from? This information should be provided.

Page 10242, line 20: Should be "at" instead of "in".

Page 10243, line 1: Should be "at an urban. . .".

Page 10243, line 6: "at 1 m63 h−1"?

Page 10244, line 10: “did not seem to have much difference between”, please correct this phrase.

Page 10245, line 10: “at the Sunset laser wavelength (660 nm),”, should be something like “at the wavelength of the Sunset Labs. Instrument (660nm)”.

Page 10246, lines 11/12: The authors refer to the supplementary material for information about samples collected at various sites in France. However, the supplementary material does not contain this information. Needs to be changed.

Page 10247, lines 7-10: I don’t understand this argument. What is the relation between soiling of the oven and front oven temperature? How can differences of a factor 4 be explained? This should be discussed in more detail.

Page 10247, lines 14/15: Again, no such information in the supporting material.

Page 10248, line 8: Delete “extensively” here.

Page 10248, lines 10/11: What does “lower quality” mean, uncertainty, bias, ...? Be more precise here.

Legend Table 2: The meaning of the three columns needs to be given, I assume it is OC, EC and TC - correct?

Table 4: How is “overall uncertainty” defined, how has it been determined? This information should be provided, e.g. in the legend.

Figure 1: It is difficult to read this plot and also the legend does not help much. What is shown here? Is the line where blue and white in the boxes meet indicating the mean value and the width of the boxes indicating the standard deviation? What is the meaning of the thin black line. In addition, green/red/yellow indicating the temperature protocol can hardly be identified. This figure should be improved.

Supporting material :

1. “Arithmetic mean for a laboratory ji at a level i:”, should be changed to “Arithmetic mean for a laboratory j at a level i:”

2. “Repeatability standard deviation for a laboratory i”, should be changed to “Repeatability standard deviation for a laboratory j”.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 10231, 2013.