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Atmospheric Measurement Techniques Discussions



# *Interactive comment on* "ECOC comparison exercise with identical thermal protocols after temperature offsets correction – instrument diagnostics by in-depth evaluation of operational parameters" *by* P. Panteliadis et al.

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We thank the reviewer for the valuable comments. A clarification will be made that the same set up applies for laboratory instruments. Indeed the semi-continuous (SC) instrument is not identical to the lab instrument but it does measure ECOC with the same thermal/optical method. The SC instruments participated in this comparison did n0t show any systematic deviating behavior or overall poor performance compared to the lab instruments and in any case cannot be characterized as unreliable. While



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results from the SC instruments were included for laboratory and method performance (3.2 and 3.3) they were excluded from the protocol comparison (3.4).

The comparison exercise aimed in pointing out any operational errors or poor performing laboratories. Thus laboratories were not aware of the actual sucrose solution concentrations prior to analysis. Samples and sucrose were analyzed and reported together. Actions on operational error elimination were taken by each user after the end of the comparison exercise and identification of the cause (lines 342-343).

While one can use the NIST SRM 1648a and NIST SRM 8785 as reference materials for ECOC analysis, what is meant by the authors is that there is no reference material containing solely EC. This will be clarified in the manuscript.

All laboratory used the same mixture of gasses. Although there is a mixture of 90%He/10%O2 used, when it is diluted with the 100% He gas in a 5 to 1 ratio then it results in the reported 98%He/2%O2.

Almost all figures are in color in the latest version. Overlying thermograms, especially when considering the number of participants, may be difficult to read but our main objective was to point out any eye-catching deviating behavior rather than providing individual information per participant. The split point range was included in the graphs in order to demonstrate if it would fall into a steep area and/or high peak of the thermogram that can potentially result in higher deviations of the EC/OC ratio among participants.

All statistical analysis results described in the method performance section can be found in detail in Figures S7 to S12 and Tables S9 and S10 at the Supplementary material. The authors do not attempt to compare split points between protocols, which as the reviewer points out does not make much sense. The difference in the split point occurrence between the 2 protocols as described in lines 267-270 is given only for informational reasons. Further in the text split point ranges are discussed separately per protocol. We actually report quite some difference in the EC/OC ratio between the



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two protocols (lines 263-264).

While a low initial laser signal may derive due to wearing of the oven it can also be related to other causes, e.g. a weak or misaligned laser unit. Differences between split points among participants can be a result of heating profile, pre-oxidation or gas flows differences. Justification for the high temperature offsets are provided in lines 83-84. What is stated in our study is that no correlation could be identified between laboratories facilitating a lower laser signal value and deviating results.

POC formation differences observed between EUSAAR2 and NIOSH870 are certainly of interest. The topic will be elaborated more in the updated manuscript. Please keep in mind though that our insight is limited to the number of samples included at the comparison exercise.

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Interactive comment on Atmos. Meas. Tech. Discuss., 7, 8697, 2014.