

Interactive comment on “Accuracy and precision of ¹⁴C-based source apportionment of organic and elemental carbon in aerosols using the Swiss_4S protocol” by G. O. Mouteva et al.

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This paper describes methodology for aerosol EC and OC separation, collection and radiocarbon measurement at the Keck Carbon Cycle Facility. They adapt the existing Swiss_4S protocol for their own system and give a detailed analysis of the performance of their system including a careful analysis of contamination corrections for these very small samples. This paper was a pleasure to read, with sufficient detail to be meaningful for others to implement the same methodology. The measurement techniques, and indeed the application of them, are sufficiently novel that this work is entirely appropriate for publication in AMT. I have a few minor suggestions for improvements to

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the paper.

Pg 3934 line 26-27. Clarify whether these values are for the extraction component only, vs including graphitization contamination.

Pg 3939 lines 9-10. Please describe and/or reference these standard analytical protocols.

Pg 3939 line 22 “..because it requires...” would read more clearly as “...because ¹⁴C requires...”

Pg 3940 lines 10 -11. What happens to the S3 material? Is it included in either EC or OC, or just discarded?

Pg 3941 lines 11-12. It would be clearer to say that O₂ and non-condensibles are “removed “ from the sample rather than the sample is “purified from”.

Pg 3942, line 5. “build” not “built”.

Pg 3947 line 24. Gauge not gage.

Section 3.3. A linear regression is a weak way of comparing these datasets, particularly since both measurements have large errors. It is not clear from the analysis whether Type II regression was used (which can take into account both errors). Certainly, given the large measurement errors, the r² value is not very useful. A more detailed statistical analysis would be appropriate here to determine how large the biases are between the two labs – there are a number of ways to do this, perhaps most simply a paired sample t-test.

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