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Interactive comment on “Evaluation of a 2-step thermal method for separating organic and elemental carbon for radiocarbon analysis” by U. Dusek et al.

Anonymous Referee #1

Received and published: 9 March 2014

The manuscript: “Evaluation of a 2-step thermal method for separating organic and elemental carbon for radiocarbon analysis” by Dusek et al. fits in the currently open debate on the most suitable thermal treatment for OC and EC separation. The proposed treatment is an alternative to two others published in recent papers (Zhang et al., 2012; Bernardoni et al., 2013), and it is stated clearly that the approach presented here was developed roughly in parallel to these others. The work is detailed and clearly presented. The final methodology proposed was chosen after tests carried out on both standard materials and real aerosol samples. Presenting separately the results for each test helps the reader following the set-up procedure.

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In the reviewer's opinion, the paper merits publication on AMT. However, the following issues have to be clarified before publication:

1) Most tests were carried out at 340°C whereas the final choice for aerosol samples seems to be 360°C. Can the authors comment on this?

2) Page 139, lines 8-16: if the referee is right, HOxII and graphite are used as “check” standards. But what is the standard used for F14C determination? (i.e. the “normalisation” standard to use in eq.1?). It should not be the HOxII commonly used, as it cannot be used both for normalisation and check

3) Page 147, line 6: unclear. Do the authors mean that the F14C overestimation can be up to 0.05*F14C(RC) or 0.05 absolute? Please clarify.

4) Page 149, lines 15-19: here the authors state that a coincident decrease in the recovered mass and F14C(RCe) can be considered as an indirect indication of residual OC removal (see line 1-2). However, the authors also state (page 148, line 16) that biomass burning soot is less refractory than liquid fuel soot. The removal of biomass burning soot would give the same effect as the removal of organic material. The optical analysis can help discriminating the two situations.

5) Figure 3 is not understandable. Some bars appear missing. Please check and modify

References 1) Manuscript by Yu et al. is reported in the reference list, but it is not present in the text 2) Poeschl, 1996 is cited in the text, but it is not present in the reference list 3) Sometimes Bernadoni et al. 2013 and some others Bernardoni et al., 2013 is cited in the text. Please check. 4) Wonaschütz et al. is cited in the text, but Wonaschuetz is reported in the reference list. Please use the same umlaut representation

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