

We would like to thank anonymous reviewer for the recommendation and the helpful suggestion. Specific responses to each of the comments are provided below (reviewer's comments in **black**, our responses in **bold font**).

RC2: 'Comment on egosphere-2023-379', Will Meredith, 18 Apr 2023

This short paper by Zhang et al is a nice attempt to explore some of the difficulties of quantifying and especially isotopically characterisation the “black carbon” fraction of a number of reference materials. Full disclosure – as one of the people responsible for developing the HyPy methodology I was delighted to see it applied here, and that it performed quite well against some of the other techniques. That said my main comment on the paper is that the authors need to get to grips with the terminology used.

Response: We thank Will Meredith for careful reading and valuable comments so much. The revision was carried out carefully according to the reviewer's suggestions. Following is the detailed response to the comments.

1. **They appear to use BC and EC interchangeably throughout and also OC and TC. I'm not sure TC is actually defined anywhere either. In both cases it would probably be better if you were consistent with terminology used throughout so that the reader is not confused.**

Response: The revision was carried out carefully according to the reviewer's suggestions. We have modified “BC” to “EC”, and modified “TOC” to “TC”.

2. **Generally I think I know what you intend, but it is not clear. As an example in line 210 you use both EC continuum and BC continuum in the same sentence.**

Response: We have modified it to “Each method only isolates a specific part of the EC continuum, rather than all the components of the EC continuum”.

3. **Likewise you talk about “separating” EC from OC, but they are part of the same thing so “isolating” may be better.**

Response: The revision was carried out carefully according to the reviewer's suggestions. We have modified “separating” to “isolating”, and modified “separation” to “isolation”.

4. **More minor comments. Don't use initials in citations in the text (e.g. line 76, 80, 97 and others). Do use dates in the list (unless not to is a weird requirement of the journal).**

Response: The revision was carried out carefully according to the reviewer's suggestions.

5. **Line 197 – sentence beginning “Compared with” currently does not make sense.**

Response: We have modified it to “The amount of EC obtained by the CTO-375 method is obviously lower than the results of the other three methods”.

6. **Line 202 – “Black carbon isotopes” specifically or black carbon content?**

Response: We have modified it to “It indicates that the CTO-375 method has obvious defects in the quantitative analysis of EC content in aerosols. Therefore, this method is

not suitable for isolating EC to isotopes analysis”.

- 7. Line 282 – “coking” should this read “charring”?**

Response: We have modified “coking” to “charring”.

- 8. NMR and SEM are brought into the discussion but not previously introduced into the methods section.**

Response: The revision was carried out carefully according to the reviewer’s suggestions. We have added them into the methods section.

For the convenience of readers, we have added “Table 2. ¹⁴C and ¹³C analysis results in SRM 1649 a/b” to the main text.