Review of
Rauber et al., *An Optimised OC/EC Fraction Separation Method for Radiocarbon Source Apportionment Applied to Low-Loaded Arctic Aerosol Filters*

The authors present an upgrade on the analytical technique for the measurement of 14C in carbonaceous aerosols. The manner of isolation of EC is a key aspect for conducting radiocarbon-based source apportionment. A plethora of techniques are in use with most employing an intermediate temperature correction step and/or pre-treatment step, while one in particular not employing either correction. Therefore, there is a need for a far superior method. This study addresses this key research gap well.

Yield correction for EC is one the most daunting aspects and major challenges for how f_m(EC) results are to be presented/interpreted. The modeling aspect presented here for yield correction is thus critical and something many published works have failed to address or take into account at all. In this regard, the new method is a new benchmark 14C applications for source fingerprinting in atmospheric aerosols.

While the analytical aspect as well as the mathematical aspect are well documented and researched, my main concern is the application to field samples directly. What is the yardstick to know if these numbers from this new method are 'real' values ? Are the readers supposed to take these numbers at face value?

- In the present form the paper is missing an entire section/discussion on reference materials and how well does the present method work for a suite of reference materials. The authors should have addressed this first. In fact, this is a good opportunity to make comparisons with newly established protocols as well (e.g., Huang et al, 2021).

- This relates to my point above, the authors have a good chance to compare with previously published results for 14C -EC analysis for samples collected at Zeppelin observatory (Winiger et al., 2015). While the samples are from 2009 winter and the method used for EC isolation is perhaps the most inferior compared to all out there, the authors could add a discuss section on why a glaring difference in the f_m values is there and if this is related to the yield correction aspect.
  My argument here is that based on the method used in Winiger et al, the biomass fraction ought to have been overestimated (as no charring correction or filter pretreatment is done). Even so their f_m values were on average 52% compared to the 66% reported in this study. Why is there this big a difference? Does it mean a bigger input of biomass BC to the Arctic over these years ?
  This is precisely my point about which numbers to believe and what could be the 'real' values?