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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Estimating contributions from biomass burning and fossil fuel combustion by means of radiocarbon analysis of carbonaceous aerosols: application to the Valley of Chamonix" *by* Lise Bonvalot et al.

Anonymous Referee #3

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Identification and quantification of the carbon contribution to particulate matter (PM) is crucial for several aspects, such as health, climate and environmental policies. Radiocarbon analysis combined with organic tracers has been demonstrated to be a powerful tool to disentangle modern (e.g. biomass burning) from fossil carbon sources in PM. This paper excels in several aspects from previous work: (1) The newly introduced combination of directly coupled EA to a CO2 gas source of an AMS ion source results in high throughput of very small (10..100 ug) samples, circumventing the costly and time-consuming graphite step. (2) The measurement techniques, including a suite of reference standards and the important assessment of contamination (regarding the

small sample size) are presented in full detail. (3) Due to the exceptionally high sample size and temporal resolution a detailed evaluation of source components of PM in two Alpine valleys is possible and presented convincingly in the paper. I recommend publication in acp without modification.

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