

Interactive comment on “Retrieving the age of air spectrum from tracers: principle and method” by Aurélien Podglajen and Felix Ploeger

Aurélien Podglajen and Felix Ploeger

a.podglajen@fz-juelich.de

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We thank the reviewer for their constructive comments on our manuscript. Please find our reply below.

1. **Reviewer** The manuscript "Retrieving the age of air spectrum from tracers: principle and method" by Aurélien Podglajen and Felix Ploeger is well written and fluid. The authors addressed the challenge of retrieving the age of air spectrum from the concentrations of multiple tracers. I think the motivations and the objective of this study is clear defined. The authors adopted an appropriate method to the aims of the study and sufficient information are provided for a researcher to reproduce the experiments described. In my opinion, the content of

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this paper, is relevant to ACP. The subject matter is new and deals an interesting topic. The results are clearly explained and presented in an appropriate format. The conclusions of the study are supported by appropriate evidence. The results obtained on this paper can be important for forthcoming application of transport models together with measurement data. However, a few minor lacks in this study are found :

Authors We thank the reviewer for this positive evaluation of our manuscript.

2. **Reviewer** Pag1 line 8 "the inversion method is applied to model output", specify what do you mean with the model output.

Authors Outputs of a chemistry transport model. This is now specified in the text.

3. **Reviewer** Pag1 and Pag8 it is not correct say that the problem it resolved without any a priori information, even if the a priori vector is set to zero.

Authors We agree that some a priori information is included. We have replaced the corresponding sentence in the abstract by: "An inversion methodology is introduced, which does not assume a prescribed shape for the spectrum."

4. **Reviewer** Pag3 the radioactive decay is not a linear process, clarify the concept.

Authors We have rephrased this sentence to clarify: "tracers whose loss/growth rate is a linear function of their concentration". See also answer to reviewer 1.

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