

Interactive comment on “Mean age of stratospheric air derived from AirCore observations” by Andreas Engel et al.

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This manuscript presents measurements of stratospheric CO₂, CH₄, and CO together with estimates of the mean age from balloon borne AirCore measurements. This new low cost measurement technique offers the opportunity for more regular measurements of stratospheric CO₂ and mean age, which are badly needed to answer questions regarding possible changes in stratospheric age.

It is shown that the mean age can be estimated from AirCore CO₂ measurements, although there are some differences between the age profiles from the same flight. These differences (uncertainties in mean age) mean that the measurements presented don't really answer the question of whether the age is increasing or decreasing over long time scales. However, it is very important to show that the age can be estimated

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from AirCore measurements, and hopefully many more measurements can be made over coming years that will help to resolve this issue.

The manuscript will be of interest to many ACP readers, is well written, and will be suitable for publication after only a few minor revisions.

SPECIFIC COMMENTS

Pg 2, line 21-23: A strengthening of BDC is expected from model calculations with increasing CO₂, and I think you need to include “increasing CO₂” in this sentence. Also, I am not sure why you say “should be reflected”. The same model calculations with increasing CO₂ show a decrease in age (if trend calculated over a long enough time period).

Pg 13, line 6: “Figures”

Pg 19, line 10: There is something missing here “that the For CH₄”

Pg 19, line 14: “performed first observation” I think “the” is needed before “first”. Also, should it be “observations”?

Figure 12: Why does the y-axis go from 0 to 10, when data is within 2 and 7. I know the authors have published figures with the same scale previously, but I think it would be much better to have a reduced vertical axis, as well as smaller symbols. Then it will be easier to see the values for individual measurements.

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