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Comment

## ***Interactive comment on “Results from the International Halocarbons in Air Comparison Experiment (IHALACE)” by B. D. Hall et al.***

**B. D. Hall et al.**

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Reply to Anonymous Review #2

We thank the reviewer for comments and suggestions. We have added and revised text that, we hope, improves readability and provides a more quantitative analysis.

See Supplement for easier reading.

General Comments

To say only that communication has improved leaves the reader a little unsatisfied. Is there any evidence to support this improved communication? Our Response: We have revised the text to be more specific. See Summary.

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The title of the paper suggests the focus is on halocarbons so perhaps the work on those greenhouse gases should be removed from this paper? Our Response: The results for non-halogenated greenhouse gases are still useful. For example, the CH<sub>4</sub> results suggest that previous work to ensure well-calibrated CH<sub>4</sub> data records is working.

Have the laser-based instruments been run alongside the GC systems at any time in field experiments for example? Our Response: We have removed the reference to laser-based instruments from the text because only one laser-based system was used during this experiment, and only for CH<sub>4</sub>. Further discussion of this subject is beyond the scope of this paper.

The results were available to the participants from 2008 but do we then assume that the findings of this paper are accurate now, five years on, or has more work been done on some of the outcomes since then? Our Response: We realize that this paper is not as current as we would have liked. However, we have included updates regarding known scale changes where significant. Work in this area continues, and any experiment such as this really only offers a snapshot of the state of the science at the time of the experiment. That is why we have included a comparison of results from this experiment to those derived from atmospheric data records at other points in time. This provides an indication of how these results are holding up over time. We have also included the following statement: “These results represent the state of the art in halocarbon measurements around 2007.”

Specific points:

The abstract should include explicit reference to all the groups of species studied to facilitate future literature searches. Our Response: The abstract has been revised as per your suggestion.

Page 8026, line 3: Replace “To the extent” with “As far as possible” Our Response: We prefer the sentence as is.

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Section 2.1. Please add in to this section how you determined the initial stability of the cylinders. How often were they analysed? Can reference be made to previous work done on the stability of the species in the cylinders? Our Response: We have included a statement regarding previous experience with this type of cylinder. “These cylinders were selected because they have shown good stability for many halogenated gases at pmol mol<sup>-1</sup> (parts per trillion, ppt) level.”

Page 8028, line 1. Define “minor differences”. Were these minor differences different for the set that was returned in 2006 and the set that was returned a year later? It looks like this data may be plotted in Figures 1-6? If so, please reference the figures and highlight the results in more detail in the text. Our Response: You are correct, this information is shown in Figs 1-6 and Tables 3 and 4. We added text to point this out.

Page 8030 Line 6 says across six scales with reference to Table 5, whilst table 5 says five? Our Response: Thank you. There are 6 scales, Table 5 was incorrect.

Page 8030 Line 8: Do you mean three scales (1,2 and 17)? Our Response: 1, 2 and 7 is correct. 15, 16 and 19 are higher. 17 is not an independent scale (as shown by diamond symbols).

Page 8031 line 29-Page 8032 line 1: Can you summarise at this point whether closer linked laboratories such as 2, 9, 14 and 17 show smaller scale transfer errors on the whole? Our Response: We have added text. “In general, transfer errors are indeed smaller for AGAGE-affiliated laboratories, but not in all cases.”

Page 8045, line 2: Define “major scales” Our Response: The word “major” has been deleted.

Table 5: Although detail is in the supplement it may be useful to include another column referencing the actual scales that were used for these statistics for clarity, unless the table becomes too busy as a result? Our Response: The point of this table is not to show information related to specific scales, but to summarize the number of scales

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identified among participants, and the relative variations. We don't think that listing specific scales would add much. This information is easily identified in figures 1-6 since each independent scale is identified by a color code, by a "circle" symbol, and by name across the top axis.

Figures 1-6: Are the results plotted from left to right in order of analysis date? Please indicate whether in general the concentrations derived from the individual laboratories are compared to the initial or final analysis of the canisters? Our Response: Results are not plotted in order of analysis date (close, but not exactly). Results were compared to the initial NOAA results, except for CFC-12 (which were only compare to the final result) and CH<sub>2</sub>Br<sub>2</sub>, for which a linear drift correction was applied. This has been added to the caption for Tables 3 and 4.

Please also note the supplement to this comment:

<http://www.atmos-meas-tech-discuss.net/6/C3439/2013/amtd-6-C3439-2013-supplement.pdf>

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