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Interactive comment on “Perfluorocarbons in the global atmosphere: tetrafluoromethane, hexafluoroethane, and octafluoropropane” by J. Mühle et al.

Anonymous Referee #2

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The paper presents measurement of very long-lived perfluorocarbons in the atmosphere and estimated annual-mean global total emissions using simple inversion methodology. This work is a genuine advancement in terms of measuring capability. Firstly, they are able to make direct measurements dating back to the 1970s, and more remarkable is the unprecedented measurement precision and accuracy achieved. Enjoyed reading the paper, particularly the observational part. The paper can be published as it is. I only have some simple suggestions, which the authors may like to consider during the revision.

P.6497, the para of L#5: I do not think, this statement is still valid "2-D model pro-

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vides similar results to that of 3-D models". Doesn't matter species of what lifetime is simulated. How does the 2-D models account for synoptic variations or dynamics of shorter timescales, which can influence site level concentrations between hours or days. I am sure dynamics at these time scales are important for many of the sites discussed here. There is also issues with stratosphere-troposphere exchange and interhemispheric transport and their interannual variability.

This in turn will also effect your source inversion results, and lead to over statements like the one in P.6506, the para of L#15. Do you really believe that EDGAR emission distribution can be questioned following the inversion methodology presented here?

At the end I congratulate the AGAGE team for being able to produce such a wonderful datasets, and research that will help the atmospheric science community in general.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 6485, 2010.

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