

## ***Interactive comment on “Global and regional emissions estimates of 1,1-difluoroethane (HFC-152a, CH<sub>3</sub>CHF<sub>2</sub>) from in situ and air archive observations” by P. G. Simmonds et al.***

**Anonymous Referee #2**

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The authors discuss measurements and global and regional emissions of HFC-152a. HFC-152a is a greenhouse gas and as such included in the basket of gases of the UNFCCC. It has specialized uses and its reported emissions are far from complete. The authors present a complete picture of the available measurements and done a good job in analyzing and discussing the regional and global emissions. The paper is well written, scientifically sound and has a clear structure. There are though a lot of acronyms. Reducing these would help the readability. I think the paper is suitable for ACP. Below are a number of smaller comments that could improve the paper.

General: - I suggest not to use the acronyms of the stations in the text, but the real

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names. This would improve the readability. - The quality and consistency of the figures could be improved. Different names are used for the labels and along the y-axis in the figures. Consistency and completeness would improve them. Also, expend the captions of the figures so they explain the figure without reading the text. Explain (or avoid) acronyms in the captions.

P21337, L7: The word ‘significant is somewhat misleading. The HFC-152a has the smallest GWP of the main HFCs. See also P21350 L10. I would simply delete the word. P21337, L22: The UNFCCC emissions are not global emissions, as is discussed later in the paper. Delete the word. P21337, L26. ‘Global’ is again confusing. Use ‘reported’? P21347, L17: ‘insignificant’ seems a value judgement. I suggest ‘almost zero’. P21348, L22: ‘possibly attributable to the economic recession’. This could be a reason of the change in growth rate, but there could be other reasons too, so why single out this? You could also argue that if HFC-152a is used as DIY in mobile AC in large amounts its use would increase during an economic recession. So, maybe rethink the statement. P21348, L29 and P21349, L13: Mention the radiative efficiency and GWP (and refs) used here. P21349, L6: Again, the word ‘global’ should not be used in relation to UNFCCC emissions. P21349, L9: The decrease in emissions in 2009 is mentioned, but it is small compared to the uncertainties. You do write ‘potential’, but does that cover it? The uncertainty in derived emissions is correlated from year-to-year. Does this make the decrease in emissions statistically significant? Please consider this. P21350, L16: The sentence suggest that Indonesia, Vietnam and other countries are not developing countries. Rephrase. P21351, L4: The bottom-up agree with the top-down emissions within the uncertainty ranges, but this depends on the assumed uncertainty of 25% in UNFCCC emissions. Where is the 25% based on? Also, before 2004 the UNFCCC emissions are always higher than the inverse emissions. Is this statistically significant considering the correlation (in time) in the uncertainties? P21352, L24ff: Is the comparison between UNFCCC emissions and those from the total domain useful, since the domains are different? P21372, Fig 2: Write the names and acronyms of the stations in the figures. Also, The scales on the y-axis

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are odd. I suggest to use more common intervals. P21376: Explain in the caption how the seasonal cycle is calculated and explain the error bars. P21379, Fig 8: Add labels explaining the green and blue bars

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