

Interactive comment on “Measurements of reactive chlorocarbons over the Surinam tropical rain forest: indications for strong biogenic emissions” by H. A. Scheeren et al.

Anonymous Referee #1

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"General comments"

This paper presents some measurements of chlorocarbons over the Surinam tropical rainforest and the emission rates of CH_3Cl , CHCl_3 and C_2Cl_4 deduced from the measurements. It does contain new and useful data to the atmospheric science. However, it contains some erroneous and misleading discussion, and I think it needs major revisions before published in ACP.

"Specific comments"

1) My major objection to the publication of this paper in its present form is that the authors attribute the small increase of C_2Cl_4 over the Surinam rainforest to the biogenic

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emission. The vertical profile of CH_2Cl_2 (Fig. 3(a)), higher in the mixing layer (ML), suggests that most of the samples collected in the ML were somewhat influenced by anthropogenic sources. The increase of C_2Cl_4 , as small as 1-2 ppt, could be explained by some anthropogenic pollution in the area.

2) p.5480 line 17-19: "Figure 6a shows that the combustion tracers C_2H_2 , C_6H_6 and CH_3CN have no significant relationship with the FCT, clearly demonstrating that biomass burning or other non-biogenic sources were negligible."

This is not correct. No significant relationship of the combustion tracers with the FCT does suggest that biomass burning or other non-biogenic sources are not evenly distributed over the area.

3) p.5481 line 3-4: "In the absence of significant biomass burning, or urban/industrial sources we attribute the positive gradients of CH_3Cl , CHCl_3 , C_2Cl_4 to biogenic emissions from the tropical rainforest ecosystem."

As described above, the absence of urban/industrial sources is not clear. Considering that C_2Cl_4 is a widely-used solvent, more evidence is necessary to conclude that this compound was actually emitted from the forest.

4) Fig. 3(a)

Flight 4 data of CH_2Cl_2 are missing.

The air samples in the ML which were selected to be free from non-biogenic sources should be marked in the figure.

5) I suggest to delete Section 5.4 as well as Table 4 and Fig.7. Estimates of annual fluxes of CH_3Cl and CHCl_3 are great subjects of controversy, and too simplified source assignments are misleading. For example, a recent study by O'Doherty et al. (JGR, 106(D17), 20429-20444, 2001) suggests much smaller flux of CHCl_3 from the ocean. I think global source budgets lies outside of the scope of this paper.

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"Technical corrections"

p.5472 line 13

"2.3 Gg yr⁻¹" should be "2.3 Tg yr⁻¹"

p.5479 line 7

"the coast" is doubled.

p.5479 line 9

" $FCT = dL / \cos(WA) \times WS / 3600$ " should be " $FCT = dL / \{\cos(WA) \times WS\} / 3600$ "

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 5469, 2003.

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