Atmos. Chem. Phys. Discuss., 8, S9878–S9879, 2008
www.atmos-chem-phys-discuss.net/8/S9878/2008/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "SCIAMACHY formaldehyde observations: constraint for isoprene emissions over Europe?" *by* G. Dufour et al.

Anonymous Referee #1

Received and published: 14 December 2008

This study investigates whether SCIAMACHY measurements of formaldehyde can, in principle, reduce uncertainty in current understanding of European isoprene emission estimates. The study does NOT answer the question posed by its own title. This is a reasonably interesting study and is suitable for publishing in ACP. The paper is not particularly well written; I include a few examples below. My main gripe, also highlighted by reviewer #2, is that the authors do not follow the study to its natural conclusion: quantifying emissions from the data. Below I list some specific comments.

1) The title is inaccurate: if only we could constrain emissions using space-borne data. More accurately, data constrains emission estimates.

2) Abstract, line 7. Europe has been studied before! The authors mean that satellite observations of formaldehyde over Europe have not previously been studied.

3) Page 19276, line 26. According to the ESA website, SCIAMACHY should be spelt out as the SCanning Imaging Absorption SpectroMeter for Atmospheric CHartographY.

4) Section 3: the tagging scheme is a substantial piece of work. Has this work been published previously? If no, the authors are obliged to describe it in a bit more detail. They seem to make some simplifications to the Pfister scheme that needs to be clarified.

5) Section 3: ignoring the CH3OH source is fine if the authors can show that this does not compromise their interpretation of the formaldehyde columns. In the current draft they suggest (not based on calculation) that ignoring CH3OH will introduce a 10% error in reproducing the formaldehyde columns. They should use the model to prove this is indeed the case.

6) Section 3: in general, correlating emissions and tagged formaldehyde columns does not prove or disprove a limited smearing effect unless the authors have tagged contributions from particular emitting grid boxes.

7) Page 19289, line 8: observations over the sea might be "questionable" but why? In any case, the authors are not using the BIRA dataset. How does the Bremen formaldehyde product compare with the BIRA product? And what are the associated implications of these differences for inferring emissions over Europe?

8) Page 19290, line 4: there is a shocking lack of detail regarding tree species. The authors should not be shy with the details.

9) Page 19290, line 19: I do not understand this statement.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 19273, 2008.

ACPD

8, S9878–S9879, 2008

Interactive Comment