



Interactive comment on “MAMAP – a new spectrometer system for column-averaged methane and carbon dioxide observations from aircraft: retrieval algorithm and first inversions for point source emission rates” by T. Krings et al.

Anonymous Referee #2

Received and published: 10 June 2011

This paper reports a detailed analysis of an experiment carried out using a new spectrometer system to study the local emissions of CO_2 and CH_4 from two large power plants. The retrieval algorithms utilised in this study have been discussed in detail, with particular attention given to the potential sources of errors.

I recommend that this paper is published after minor revisions, the majority of which are grammatical in nature rather than scientific.

My only concerns are regarding two of the assumptions made which may require fur-

C834

ther justification.

First the algorithm uses the light-path proxy technique usually utilised for CH_4 (where the CO_2 is assumed to be relatively homogeneous) for both the calculation of X_{CO_2} and X_{CH_4} . It is not clear what the authors use here for the average mole fraction used in the calculations and whether this assumed value impacts upon the results. I suggest stating the values and providing justification for their use as well as assessing the effect of any uncertainty in this value.

Secondly, as recognised in the text, the wind speed is a crucial variable in determining the X_{CO_2} and X_{CH_4} values and hence knowledge of its uncertainty is important. As this is such a critical parameter, a “rough estimate” of the uncertainty based on the monthly bias does not seem consistent with the rigorous nature of the rest of the paper. It may be enough to recognise this fact and account for it in the future (as the authors intend to do using on-site wind information).

Technical (typographical/grammatical) corrections

Despite the excellent scientific content, the language is awkward in places. A correction of some of the grammatical errors would help in the readability of the paper which is quite verbose and could be expressed more concisely.

The authors use US/UK spellings inconsistently, examples include (but not limited to): localized (US), minimizing (US), modelling (UK), characterised (UK), favourable(UK).

Typographical errors:

P2210:L28 samling P2212:L5 refinerie P2218:L11 topographic P2226:L11 a priori
P2228:L8 length P2236:L15 reasult P2236:L19 there is almost not systematic

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 2207, 2011.

C835