**Atmospheric
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Interactive comment on "Interference errors in infrared remote sounding of the atmosphere" *by* R. Sussmann and T. Borsdorff

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In stating (in the abstract) "interference errors, which have not been treated up to now" and (in the conclusions) "a class of potentially significant errors exists ... that has not been treated in the literature up to now" you overlook a large amount of published work from the satellite infrared sounding community dealing primarily with this problem, usually known as "microwindow selection" or "channel selection".

Apart from those from the TES team, to which Kevin Bowman has already drawn your attention, there have been a few on MIPAS in Applied Optics: firstly from your own institute (von Clarmann & Echle, App.Opt, 1998 and Echle et al, App.Opt, 2000) and from us in Oxford (Dudhia, Jay & Rodgers, App.Opt, 2002) which explains the selection, and error analysis (including interference error contributions), of those used in the ESA

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operational retrievals. I assume similar studies, not necessarily published, have been performed for most recent infrared satellite instruments.

In your introduction you also say "the theoretical framework for retrieval of profiles from spectral measurements via optimal estimation (OE) was developed over three decades ago (Rodgers, 1976) and has been applied solely to microwave soundings for a long time." I mentioned this to Clive Rodgers the other day and, like me, he was a bit surprised since he thought he'd spent the last 30 years applying these techniques to infrared retrievals. I know he desinged the OE algorithms used for the retrievals of temperature and composition from the SAMS instrument on the Nimbus-7 satellite (late 70s/early 80s) and we've been using them in Oxford ever since.

So, firstly, on behalf of everyone already in this field, welcome! and, secondly, I think you need a more extensive literature review to explain what's been done already and what you're doing that's new.

From a quick look over your paper it seems that your approach is the theoretically optimum one of simultaneously retrieving *everything* that could possibly affect your target species, whereas those faced with having to construct a practical retrieval algorithm for operational satellite measurements have opted for the approach of retrieving relatively few parameters and selecting the microwindows so as to minimise (but still quantify) the error contributions from unretrieved parameters, which are mostly the interfering gas lines.

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