

## ***Interactive comment on “Comparing forward and inverse models to estimate the seasonal variation of hemisphere-integrated fluxes of carbonyl sulfide” by A. J. Kettle et al.***

### **Anonymous Referee #2**

Received and published: 5 August 2002

GENERAL COMMENTS: This paper addresses the OCS budget imbalance problem. It has been argued in the past that the Northern hemisphere is a net source of OCS to the south, but attempts to nail this down have met with limited success due to problems with our understanding of the oceanic source and terrestrial sinks. This is not unrelated to the long standing difficulty with either an overestimation of sources or an underestimation of sinks. The authors attack the problem using two independent modelling approaches. Overall I think this is a valuable contribution to this field, and the authors have shown that the slightly unconventional modelling approach is a good tool.

SPECTIFIC COMMENTS: I think the point of this paper is to show how this approach can be used to analyse the biogeochemical behaviour of (in this case) OCS. It is in my

[Full Screen / Esc](#)

[Print Version](#)

[Interactive Discussion](#)

[Original Paper](#)

mind of less importance that the discrepancies in the sink terms in the north cannot be resolved between terrestrial or oceanic sinks. It is more important that the results of this type of analysis are entirely consistent with our knowledge of this system, and that the only data used to get to those outputs was time series of column OCS.

I think it would have been good if the authors could have put some sort of uncertainty envelope around the stratosphere source/sink terms - as it is there seems (to me) to be a bland statement about this not being important - and I am not sure I would agree - I think that folk do not yet know whether this is true or not. It seems to me that this potentially could affect the conclusions considerably if it were not true.

TECHNICAL COMMENTS: I found this quite hard to read, but on the other hand I would not expect this be "easy" - it is densely written, and this is appropriate given the nature of the work. I cannot decide whether the style adopted helps or hinders readability - there are minor grammatical errors. I found some of the figures both quite hard to read and difficult to get my head around, but once I understood what the authors were actually using the figures to show, it became clearer.

Structurally, although when I read it first, I thought the CO<sub>2</sub> section was overlong and out of place - it actually is quite a crucial part of the rationale of the whole work, and is fine. However, I think the link between OCS and CO<sub>2</sub> should be flagged up earlier so that it is expected.

Otherwise, I favour all the data etc appearing in the paper and have no other problems with it.

---

Interactive comment on Atmos. Chem. Phys. Discuss., 2, 577, 2002.

[Full Screen / Esc](#)[Print Version](#)[Interactive Discussion](#)[Original Paper](#)