

Interactive comment on “Atmospheric carbonyl sulfide (OCS) variation from 1992–2004 by ground-based solar FTIR spectrometry” by N. M. Deutscher et al.

Anonymous Referee #1

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General comments: The paper presents remote sensing observations of OCS, performed by ground-based FTIR-spectrometry above four sites in the Northern and Southern hemisphere. The interpretation concentrates on the seasonal variability and the long-term trend. The seasonal variability and the long-term trend of OCS is relatively well known and has been published. Nevertheless, the results might be interesting because the comparable analysis of all four stations might allow to get more insight into the OCS sources and sinks. However, currently the results are not discussed in sufficient depth so far. Without a detailed discussion the paper does not present anything new compared to what has been published throughout the last years. Therefore,

currently I cannot recommend publication. Provided the results are discussed in much more detail the paper might be appropriate to be published.

Specific comments: The authors present the partial columns at the four stations. One of the most interesting results for me is the apparent decrease of OCS between 4 and 12 km above Arrival Heights. This is not discussed in the paper. Interestingly, the 4-12 km above Hawaii seem to increase throughout that time-span. This is also not discussed.

The authors state that the Lauder data show a smaller seasonal variability because Lauder is situated inland, removing it from potential oceanic influence. I do not agree with this statement. As far as I know the lifetime of OCS is quite long, so I assume that the time the air travels above the south island of New Zealand is not sufficient to change the OCS concentration.

The statement that the observed correlation between OCS and water at Wollongong suggest a common source for both, may be caused by a specific meteorological conditions, is not sufficient. The analysis of trajectories would allow to investigate the origin of the air-masses and to clarify this.

The authors state that the total columns have been corrected for the surface pressure. It is not clear to me whether the columns have been corrected for the mean pressure on each day, or just for the mean pressure for all years. Have the partial columns (0-4 km) also been corrected for the surface pressure or not?

The results are not discussed considering what has been published so far. I just give three papers which should be cited and discussed: - Xu, X., H. G. Bingemer, H.-W. Georgii and U. Schmidt, Measurements of carbonyl sulfide (COS) in surface seawater and marine air, and estimates of the air-sea flux from observations during two Atlantic cruises, *J. Geophys. Res.*, 106, 3491-3502, 2001. - Notholt, J., Z. Kuang, C. P. Rinsland, G. C. Toon, M. Rex, N. Jones, T. Albrecht, H. Deckelmann, J. Krieg, C. Weinzierl, H. Bingemer, R. Weller and O. Schrems, Enhanced Upper Tropical Tropospheric COS:

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Impact on the Stratospheric Aerosol Layer, *Science*, 300, 307-310, 2003. - Kettle, A. J., T. S. Rhee, M. von Hobe, A. Poulton, J. Aiken and M. O. Andreae, Assessing the flux of different volatile sulfur gases from the ocean to the atmosphere, *J. Geophys. Res.*, 106, 12193-12209, 2001.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 6, 1619, 2006.

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6, S518–S520, 2006

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